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? show files;ds
File 350:Derwent WPIX 1963-2006/UD,UM &UP=200630
      (C) 2006 Thomson Derwent
File 344:Chinese Patents Abs Jan 1985-2006/Jan
      (C) 2006 European Patent Office
File 347:JAPIO Dec 1976-2005/Dec(Updated 060404)
      (C) 2006 JPO & JAPIO
File 371:French Patents 1961-2002/BOPI 200209
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      (C) 2006 Institution of Electrical Engineers
File 35:Dissertation Abs Online 1861-2006/Apr
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File 65:Inside Conferences 1993-2006/May 12
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File 256:TecInfoSource 82-2006/Jun
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File 474:New York Times Abs 1969-2006/May 11
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File 475:Wall Street Journal Abs 1973-2006/May 11
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File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
      (C) 2002 The Gale Group
File 23:CSA Technology Research Database 1963-2006/Apr
      (C) 2006 CSA.
File 56:Computer and Information Systems Abstracts 1966-2006/Apr
      (C) 2006 CSA.
File 94:JICST-EPlus 1985-2006/Feb w1
      (C)2006 Japan Science and Tech Corp(JST)
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Set      Items  Description
S1        12    (DISPLAY? OR VIEW? OR SHOW?)(3N)(PRICE? ?(2N)(CHOICE? ? OR
                SELECTION? ?))
S2       5457    (PRODUCT? ? OR ITEM? ? OR GOOD? ? OR MERCHANDISE)(6N)(INVE-
                NTORY OR STOCK OR AVAILABLE OR AVAILABILITY OR SUPPLY OR SOLD
                OR VOLUME)(6N)(LEVEL OR TOTAL OR AMOUNT)
S3       97701    (USER? OR BUYER? OR PURCHASER?)(6N)(SCREEN OR TERMINAL OR -
                MONITOR OR WINDOW OR DISPLAY)
S4         0     S1 AND S2 AND S3
S5        35     S2 AND S3
S6        47     S1 OR S5
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Set      Items  Description
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                NTORY OR STOCK OR AVAILABLE OR AVAILABILITY OR SUPPLY OR SOLD
                OR VOLUME)(6N)(LEVEL OR TOTAL OR AMOUNT)
S3       97701    (USER? OR BUYER? OR PURCHASER?)(6N)(SCREEN OR TERMINAL OR -
                MONITOR OR WINDOW OR DISPLAY)
S4         0     S1 AND S2 AND S3
S5        35     S2 AND S3
S6        47     S1 OR S5
? s s6 from 350,344,347,371
S7         37     S6 FROM 350,344,347,371
? s s6 not s7
                47     S6
                37     S7
S8         10     S6 NOT S7
? rd
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>>>Duplicate detection is not supported for File 350.
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>>>Records from unsupported files will be retained in the RD set.

S9 10 RD (unique items)

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File 350:Derwent WPIX 1963-2006/UD,UM &UP=200630

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File 344:Chinese Patents Abs Jan 1985-2006/Jan

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File 347:JAPIO Dec 1976-2005/Dec(updated 060404)

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File 94:JICST-EPlus 1985-2006/Feb w1

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Set Items Description

S1 12 (DISPLAY? OR VIEW? OR SHOW?)(3N)(PRICE? ?(2N)(CHOICE? ? OR SELECTION? ?))

S2 5457 (PRODUCT? ? OR ITEM? ? OR GOOD? ? OR MERCHANDISE)(6N)(INVENTORY OR STOCK OR AVAILABLE OR AVAILABILITY OR SUPPLY OR SOLD OR VOLUME)(6N)(LEVEL OR TOTAL OR AMOUNT)

S3 97701 (USER? OR BUYER? OR PURCHASER?)(6N)(SCREEN OR TERMINAL OR - MONITOR OR WINDOW OR DISPLAY)

S4 0 S1 AND S2 AND S3

S5 35 S2 AND S3

S6 47 S1 OR S5

S7 37 S6 FROM 350,344,347,371

S8 10 S6 NOT S7

S9 10 RD (unique items)

?

PLEASE ENTER A COMMAND OR BE LOGGED OFF IN 5 MINUTES

? t9/3,k/all; t7/3,k/all

9/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

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09872717

Title: Global stability conditions for rate control with arbitrary communication delays

Author(s): Ranjan, P.; La, R.J.; Abed, E.H.

Author Affiliation: Dept. of Electr., Univ. of Maryland, College Park, MD, USA

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Language: English

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File 15:ABI/Inform(R) 1971-2006/May 12
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 File 16:Gale Group PROMT(R) 1990-2006/May 12
 (C) 2006 The Gale Group
 File 148:Gale Group Trade & Industry DB 1976-2006/May 12
 (C)2006 The Gale Group
 File 160:Gale Group PROMT(R) 1972-1989
 (C) 1999 The Gale Group
 File 275:Gale Group Computer DB(TM) 1983-2006/May 11
 (C) 2006 The Gale Group
 File 621:Gale Group New Prod.Annou.(R) 1985-2006/May 11
 (C) 2006 The Gale Group
 File 9:Business & Industry(R) Jul/1994-2006/May 08
 (C) 2006 The Gale Group
 File 20:Dialog Global Reporter 1997-2006/May 12
 (C) 2006 Dialog
 File 476:Financial Times Fulltext 1982-2006/May 13
 (C) 2006 Financial Times Ltd
 File 610:Business Wire 1999-2006/May 12
 (C) 2006 Business Wire.
 File 613:PR Newswire 1999-2006/May 12
 (C) 2006 PR Newswire Association Inc
 File 24:CSA Life Sciences Abstracts 1966-2006/Apr
 (C) 2006 CSA.
 File 634:San Jose Mercury Jun 1985-2006/May 11
 (C) 2006 San Jose Mercury News
 File 636:Gale Group Newsletter DB(TM) 1987-2006/May 11
 (C) 2006 The Gale Group
 File 810:Business Wire 1986-1999/Feb 28
 (C) 1999 Business Wire
 File 813:PR Newswire 1987-1999/Apr 30
 (C) 1999 PR Newswire Association Inc
 File 13:BAMP 2006/Apr w5
 (C) 2006 The Gale Group
 File 75:TGG Management Contents(R) 86-2006/Apr w5
 (C) 2006 The Gale Group
 File 95:TEME-Technology & Management 1989-2006/May w1
 (C) 2006 FIZ TECHNIK
 File 348:EUROPEAN PATENTS 1978-2006/ 200619
 (C) 2006 European Patent Office
 File 349:PCT FULLTEXT 1979-2006/UB=20060511,UT=20060504
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S4	7	S1 AND S2 AND S3
S5	2184	S2 AND S3
S6	2546	S1 OR S5
S7	128	S2(30N)S3
S8	134	S4 OR S7
S9	52	S8 FROM 348,349
S10	82	S7 NOT S9
S11	62	S10 NOT PY>2000
S12	38	RD (unique items)
S13	90	S9 OR S12
S14	90	S4 OR S13

? t14/3,k/all

14/3,K/1 (Item 1 from file: 15)
 DIALOG(R)File 15:ABI/Inform(R)
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01986094 49812020
 i-3PL puts customers online with their data
 Anonymous

00178104/19 Links

PCT FULLTEXT

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00178104 **Image available**

INTEGRATED ELECTRONIC PARTS WAREHOUSING AND DISTRIBUTION SYSTEM AND METHOD
PROCEDE ET SYSTEME D'EMMAGASINAGE ET DE DISTRIBUTION INTEGRES DE COMPOSANTS
ELECTRONIQUES

Patent Applicant/Assignee:

EPSTEIN Morris,

Inventor(s):

EPSTEIN Morris,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9011572 A1 19901004

Application: WO 90US1485 19900320 (PCT/WO US9001485)

Priority Application: US 89749 19890321

Designated States:

(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)

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KR LK LU LU MC MG MW NL NL NO RO SD SE SE SU

Main International Patent Class (v7): G06F-015/24

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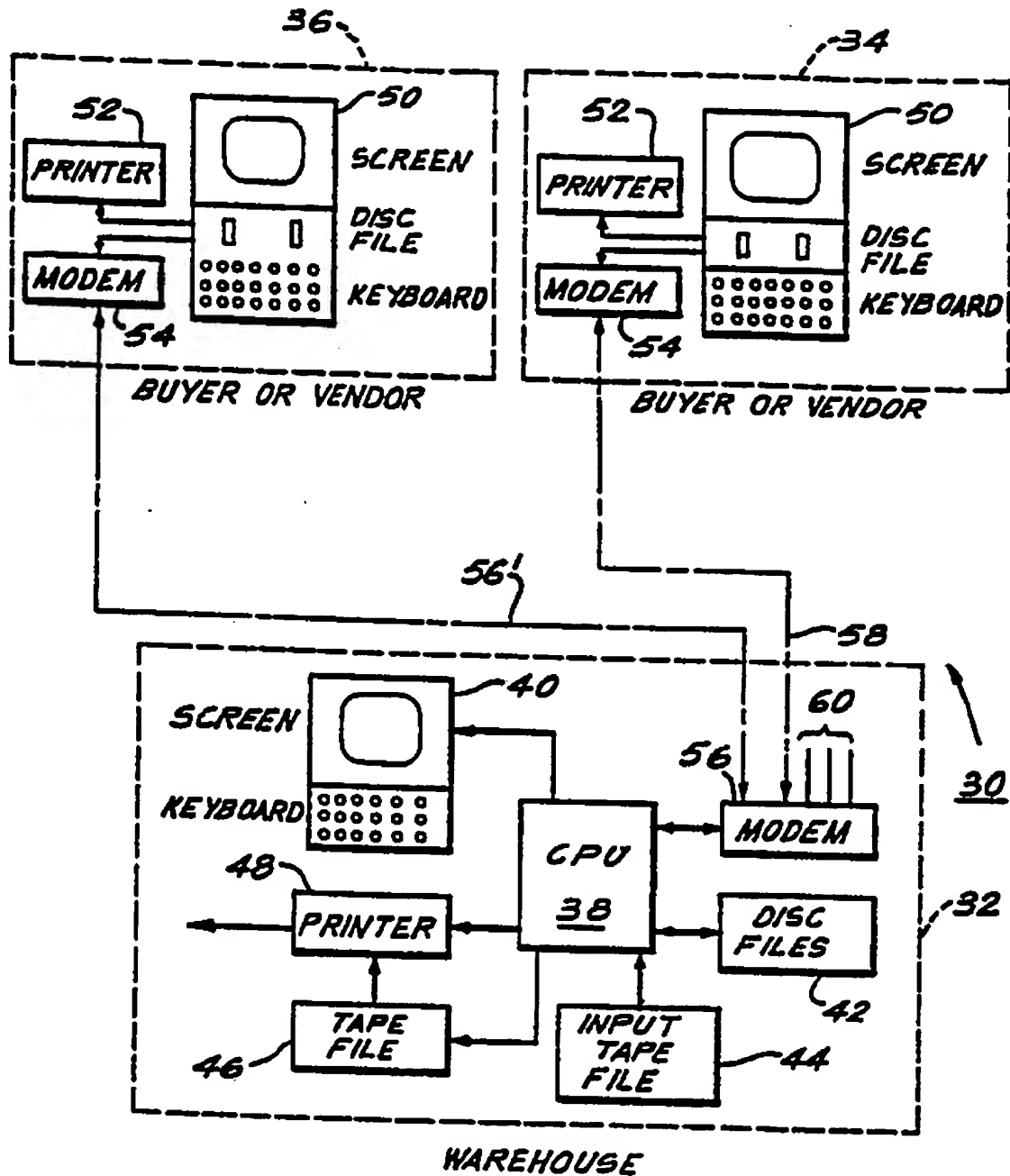
English Abstract

An integrated parts ordering system and method and warehousing system and method is provided. The parts ordering system and method employs computers (34, 36, 38) to allow a buyer to obtain information about particular parts maintained in the warehouse system (32). The parts are owned by a plurality of suppliers. The price of the parts, quantity in stock, and other information is provided to the buyer by the system. An electronic purchase order may be prepared and transmitted to the central computer (38). The central computer (38) may also be used to maintain and control inventory in the warehouse system (32). The central computer (38) can generate picking lists and verify buyer's orders for shipment. A method and system is also provided for electronically transferring funds to cover payments for items purchased by electronic purchase order and filled by the warehouse system (32).

French Abstract

Système et procédé d'emmagasinement et de commande intégrés de composants électroniques. Le procédé et le système de commande de composants utilisent des ordinateurs (34, 36, 38) pour permettre à un acheteur d'obtenir des informations concernant des composants particuliers stockés dans le système d'emmagasinement (32). Les composants sont la propriété de plusieurs fournisseurs. Le prix des composants, les quantités de stocks et autres informations sont fournis à l'acheteur par le système. Une commande d'achat électronique peut être préparée et transmise à l'ordinateur central (38). L'ordinateur central (38) peut également être utilisé pour tenir et suivre l'inventaire du système d'emmagasinement (32). L'ordinateur central (38) peut produire des listes de triage et vérifier les commandes des acheteurs aux fins d'expédition. L'invention concerne également un procédé et un système de transfert électronique de fonds

pour couvrir les paiements d'articles achetés au moyen d'un ordre d'achat électronique exécute par le système d'emmagasiner (32).



Detailed Description

INTEGRATED ELECTRONIC PARTS WAREHOUSING AND DISTRIBUTION SYSTEM AND METHOD

A* FIELD OF THE INVENTION

This invention relates to warehousing and distribution systems and methods, and particularly to such systems and methods for warehousing and distributing

relatively small items such as fasteners, electronic parts, office maintenance supplies and the like.

Be BACKGROUND OF THE INVENTION

Prior Ordering Systems

The purchase, supply, inventory maintenance, and payment processing of relatively small items such as fasteners, electronic components and office maintenance supplies, items which are required to be supplied repetitively and in significant quantities, can be relatively time consuming, expensive and result in rather complex, unreliable manual procedures.

In a typical ordering process, a buyer wishes to purchase a specific item, If the buyer has a source book which lists multiple suppliers of a variety of items, he can look up the names of more than one supplier. Further, if the buyer has obtained catalogs from any of those suppliers, he can look up the item to obtain price and delivery information, However, in the typical situation, the buyer must call or write to the particular supplier in order to make certain of prices because the catalog prices are frequently out of date. Further, if the buyer wishes to have catalogs, usually he or she must call or write for the information.

The source book itself also causes additional problems. First, it usually is revised only infrequently and thus often is out of date. Additionally, the source book lists suppliers who may no longer handle the item, or may handle it only as a convenience to their customers and do not maintain it in stock. This means that they probably cannot provide fast delivery and that their prices will most likely be considerably higher than others, Further, the suppliers may no longer be at the listed location or even in business, Attempting to call or write to any of the above suppliers, clearly wastes a large amount of a buyer's time, Even when the buyer purchases the item on a somewhat regular basis, he may not be aware of the current prices charged by the regular suppliers, or be aware of any new suppliers who have entered the market, Thus, the buyer often will miss the best price or supplier unless he spends a considerable amount of time in investigation.

After choosing a particular supplier, a buyer wishing to place an order usually must prepare a written purchase order and mail it to the supplier. The supplier typically acknowledges the order in writing, giving expected shipping dates, and other pertinent information, Of course, the supplier also can refuse the order. All of this written communication can go on for days or even weeks, orders can also be given by telephone. This can be a much faster system if the proper person can be reached at the supplier's place of business. However, this approach

is less than fully satisfactory because it increases the chances for error in that spoken words are frequently not reduced to writing for visual verification. Even if the order is reduced to writing, it easily can be written incorrectly, thus creating an incorrect order.

Even the use of a written purchase order can create opportunities for error. If purchase orders are prepared or typed by someone other than the buyer, there can be an error in communication or typing. Further, when an acceptance is prepared by the supplier, additional errors can occur. Beyond that, communications may be lost, delayed or even destroyed by mail handling.

Still other errors may be caused by differences in nomenclature and specifications for particular items. Many suppliers have their own names and part numbers for specific items. Both the deviation in name and part number can cause numerous errors since each usually must be looked up and verified for each different supplier. This not only creates an additional source of errors, but takes still further time.

When ordering modest quantities of a relatively large number of different items, it is often most cost efficient to consolidate those orders with one or a small number of suppliers. Typically, the selection of the suppliers is made haphazardly and the lowest total price is often not obtained.

A still further problem in the buying process is caused by the difficulty or inability of supervisory personnel to determine whether the buyers are purchasing on a best-price basis, or have otherwise been dealing with suppliers in an appropriate manner.

Computerized electronic supply systems of a wide variety have been proposed in the past in order to alleviate some of the foregoing problems.

In one type of prior system, a single buyer had contracts with various suppliers whereby the suppliers agreed to sell specific items at specific prices. The buyer punched cards, one for each item, which were read and the information transmitted over telephone lines to the specified vendor. The vendor's equipment punched card corresponding to those received by the buyer, to be used as an order to be filled by the vendor. Such a system did not provide any means for identifying multiple vendors for a given item, or for operating other than on a contract basis. Thus, the buyer could not quickly shop for the best price or terms from a variety of vendors.

Other systems have been provided whereby orders

for a variety of vendors from a particular buyer are collected, sorted and accumulated according to vendor. Then, a batch of orders is transferred electronically to each vendor. Such a "clearing house" operation also does not provide a solution to the vendor's selection problem, and has other shortcomings.

Some direct electronic connections have been made between a specific vendor and a specific buyer by use of a video screen. The buyer can call up on the screen a purchase order form, fill it in, and transmit it directly to a similar terminal at the-vendor's place of business.

However, such an arrangement also does not solve the vendor's selection problem and falls short in other respects.

Yet another system collects information from suppliers concerning their surplus inventory. A computerized database or directory of this surplus inventory is thus created. In practice, a buyer accesses this database from a terminal at his location to ascertain suppliers who are offering the particular item he desires.

occasionally, the prices at which the item is offered for sale are also displayed. The buyer, after obtaining this information, usually must then contact the particular supplier or suppliers directly. Since this system often is not updated regularly and often involves odd lots of less commonly used items, it is not always helpful. Further, items listed frequently are not in stock since, once the surplus is gone, there may be no additional inventory available for sale. Lastly, when prices are shown, they are not necessarily current.

Another system which was proposed had suppliers or vendors listing their items on a central computer, along with their current price schedule. Buyers who subscribed to the system were to be able to access the central computer which would display on a computer screen the particular item and the various suppliers offering that item along with the current prices. When a supplier wished to place an order he could prepare an electronic purchase order which would be sent via the central computer to the vendor's terminal. The vendor could then respond any time after receiving the order with either a confirmation, change of price, or rejection.

Further, this system still required the vendor to accept or reject the order and to ship the products from his location. Such a system still failed to optimize the ordering and shipping procedures.

2s Prior Warehousing Systems

Historically, inventory control in warehouses has

been maintained manually, for example, on file cards. Each card controls a single stock item, or stockkeeping unit (11SKU11). The file card shows the current quantity of each item on hand. The quantity listed usually has not been verified by physically checking the items in the warehouse. A running balance is maintained by deducting shipments and adding receipts. Most conventional computerized warehouse systems still keep records in substantially the same way; that is, by creating and maintaining files by stockkeeping unit.

In practice the SKU quantity shown on a card or in a computer file has no actual existence as a single, discrete unit in a warehouse, but rather is the sum of items physically contained in several warehouse units or containers, the number and locations of which can change daily. In the absence of fail-safe computerized control over such items, a large warehouse can experience any number of inventory difficulties. This is especially true where a relatively large inventory of small parts is maintained.

Some of the problems with such prior systems are the following: incorrect shipments; misplaced part; pilferage and inaccuracy of the records as to the amount of stock actually on hand, other problems include delays in shipping; insufficient use of warehouse space; excessive labor costs and methods.

In Canadian Patent Number 1,188,814 issued June 11, 1985, of which the applicant is a co-inventor, the above problems are addressed, at least in part. The disclosure of that patent hereby is incorporated herein by reference.

While the last-described system offered numerous advantages over prior systems, it left substantial room for improvement in the areas of accuracy and speed of filling orders, labor costs, and efficiency of utilization of warehouse space,

3* Distribution by Manufacturers and Importers

Most manufacturers or importers of fasteners and similar items carry an inventory of fast-moving items to supplement their production schedules. This provides an extra service for their customers, and allows them to smooth over their production or purchase orders by producing parts for stock when sales are slow. Once this stock has been produced, however, its control usually is not very efficient because of some or all of the foregoing problems.

Usually, a complete warehouse operation must be maintained, even though the range of items carried is fairly limited because it reflects only the items manufactured by the owner of the warehouse. This can be very costly. The manufacturer's telephone salesperson usually are trained by quote prices for large production orders, for

which they may receive a significant commission. They may consider the process of quoting price and availability for small stock quantities to be a waste of time, especially if they receive many inquiries but few orders. The warehouse may not be geared to ship small quantities of an item, nor to make same day shipments when requested. Therefore, the smaller orders are lost, and with them the larger follow-on orders which can be so valuable.

The manufacturer may run out of stock on active items, thereby generating more non-productive inquiries.

Therefore, with only a narrow product range, and the possibility of active items being out of stock, the potential buyer probably will call other sources first.

When the manufacturer receives only a small share of inquiries for the items in this inventory, the value of his investment in the warehouse is seriously reduced.

There are special problems with proprietary items.

After the manufacturer of proprietary items expends a great deal of time and money in convincing engineers to design their product into the final assemblies, a network of

authorized distributors is usually put in place to make the purchasing function more efficient. These authorized distributors are expected to give some technical advice to the user and to stock a representative range of time to offer quick delivery.

A problem often occurs with the non-active items.

With these times, the distributor is wary of carrying too large an inventory without a reasonable return on his investment,, yet it may not be available when needed from the manufacturer's stock. The authorized distributor is then almost forced to carry these items in his own stock in order to be able to service the occasional orders he may receive.

If the resulting erosion of profit is too severe, the distributor may refuse to carry the product at all. The overseas manufacturer also has special problems. Currently, an overseas manufacturer has roughly three options for selling his products in the U.S., one option is to carry no inventory in the U.S., and to sell only by shipping directly to the customer. Such sales usually are for large quantities with a long lead time, and are usually very competitively priced. Sales are usually made through U.S. or overseas based trading companies, independent sales agents, or by the manufacturer's own direct sales staff. In many cases, the customer does not know the name of the manufacturer, and for

repeat orders, the customer may move to another manufacturer if he receives a lower price or quicker delivery. Thus, the manufacturer loses follow-up business, and often must suffer with extremely modest profit margins.

A second option for the foreign manufacturer is to place a consignment inventory at one or more stocking distributors in the U.S. This has the advantage of opening the market to more customers, but the manufacturer is limited to the sales and marketing scope of these distributors. They simply may not be reaching anywhere near the full potential market for the product. If there is only one distributor, there is only limited coverage, while with more than one distributor, the inventory investment is multiplied, while the incentive for the distributors to sell the product is reduced. The cost for this service may be high, and this may make the price of the product noncompetitive.

A third option is for the foreign manufacturer to open his own warehouse in the U.S. This is probably the most costly option of all. The manufacturer must pay for the purchase or rental of a warehouse, buy or rent a full range of warehouse equipment, staff the warehouse and office operations, and still have to pay for a full sales and marketing efforts, he probably can reach only a small portion of the potential customers,

C* SUMMARY OF THE INVENTION

Accordingly, it is an object of the invention to provide a system and method for alleviating the foregoing problems and improving upon the prior systems and methods. In accordance with the present invention! there is provided a system and method for electronically communicating information regarding the identity of suppliers for selected physical items. The system and method allow the buyer to quickly obtain the name of at least one vendor, and preferably a substantial list of vendors, for any one of a large quantity of different items.

Moreover, the buyer is provided, at the same time, with the prices charged by each vendor for the item and the quantities desired by the buyer.

Preferably, the physical items are stored in a central public warehouse containing products owned by many different business entities. The information communicated to the buyer is for the items in that warehouse.

It is also preferred that the system and method provide electronic communication between the buyer and a central computer which maintains a running inventory of the public warehouse system as well as additional pertinent information including suppliers' names, business history, prices and re-supply schedule.

In practice, the buyer can inquire as to the availability and pricing of a multitude of items maintained by the central public warehouse system by inputting part numbers into a local input/output ("I/O") device and electronically communicating those parts numbers to the central computer, in a batch. The central computer then provides a list of vendors who maintain an inventory of the particular item within the public warehouse system, the price of the part charged by each vendor and the quantity of that item in stock and available from the public warehouse system. The buyer can create a purchase order on his I/O device, which is then electronically transmitted to the central computer. Thiri order is then conveyed to the public warehouse system by the central computer for processing.

In a preferred embodiment of the system and method, the central public warehouse system electronically communicates with the central computer to maintain a running inventory of the items stored in the warehouse system. This communication also is used to provide a comprehensive warehouse control system which not only directs and maintains individual item's locations within a given warehouse, but also prepares picking lists, warehouse movement directions and shipping documents in response to orders received electronically from a buyer's input/output device.

Data is maintained by the central computer on the frequency of inquiry of buyers for each particular part stocked by a vendor, orders placed, etc. Suppliers can electronically obtain this data by communicating with the central computer through an I/O device.

It is also preferred that the buyer maintain a letter of credit with a pre-designated bank such that sometime after the transmittal of an electronic purchase order to the central computer the necessary funds may be wire-transferred through the pre-designated bank to the vendor. This eliminates the processing of checks and the like through each party's respective accounting department.

Both the buyer and the vendor save time, effort and money by using the electronic transfer system. The elimination of billing invoices and checks greatly reduces the labor necessary to complete a purchase.

In a warehouse associated with the present warehouse system, it is preferred that all items be stored in four functionally distinct storage areas. Three of these storage areas are for full containers while the fourth is for open containers, The first of the four storage areas is for full pallet quantities of a single item or a single container size. The second storage area is for multiple containers of the same item and the third storage area is for single containers of an item. The use of these four

storage areas provides a substantial benefit over prior systems by maximizing storage density and minimizing container handling*

A central computer, which is the same computer as that which is used to accept inquiries and orders from buyers, is used to assign random storage locations in each of the three full container storage areas. This assignment is done as shipments are received in the warehouse. At the time shipments are received, computer generated labels as well as bar codes are placed on each incoming container.

The labels provide a variety of information about each container including its intended storage location, supplier, part number,, etc. The bar code is used strictly to identify each container. This bar code information is stored in a local warehouse computer (PC) along with the label information. At the end of each business day all receiving records are up-loaded to the central computer from the local warehouse computer. Certain other information is down loaded to th

e local computer from the central computer as needed.

The computer system directs the movement of the containers in the warehouse. In response to orders which have been input to the central computer by buyers (and sometimes by vendors) the central computer generates "picking" lists. From these lists, items are picked for shipment. This picking involves the pulling of full containers of the items as well as the assembly of partial container quantities. As such, containers are moved around in the warehouse from each of the four storage areas. In each case, the movement is accompanied by a newly generated computer label which includes the new storage location or customer information as well as the other information which was recorded at the time of the container's receipt. With each movement, the container's bar code is also scanned to verify that the proper container is being moved. After particular orders have been picked and organized they are sent to a shipping area. At the shipping area, various documentation which has been generated by the computer in accordance with the order and the information stored upon receipt, is reviewed. This is the final check of the order before it leaves the warehouse and is accompanied by a complete scan of each individual container's barcode. Thus, the integrity of the order is verified.

The use of the bar codes virtually guarantees that orders are being shipped correctly and that the inventory is immediately retrievable from a given location. The use of the four storage areas substantially improves the warehouse's storage density while minimizing container movements. Further, by employing local microcomputers (PCs)

there is a substantial savings in central computer usage and communication costs (if the central computer is located offsite).

When this automated warehouse system is coupled with the previously described electronic ordering system, efficiencies of scale are realized.

The public warehouse system permits specialization in a given market. Thus, when all the suppliers to the warehouse system are concentrated in a single industry, with a clearly defined customer base, it is possible to provide more options than would be available otherwise.

Particularly, buyers can access the warehouse system's composite inventory database to obtain instant quotations and place orders for immediate shipments based on current inventory. This can be done despite the fact that items may be from several different suppliers. In most previous systems,, the buyer's computer access was limited to a single supplier.

With the present system, there is no paper work necessary to transfer an order to the warehouse for filling.

The buyer, who was able to select his desired items from a variety of vendors and prices has undoubtedly had his information gathering effort minimized. This is because he does not need to make phone calls to get competitive prices and available information. Further, the buyer's shipping costs may be greatly reduced if he has ordered items provided by multiple suppliers. Previously, such orders WO 90/11572 PCr/US90/01485

order need not be called back in by the buyer to a chosen supplier and can be shipped almost immediately, The order is transmitted electronically to the central computer used by the warehouse system and can thus be filled right away, 5 The order is further expedited since the items are necessarily in stock and available for shipment.

The buyer also has the ability to enter reservations instead of placing conventional backorders with a single supplier, With the reservation system each supplier that can furnish the part is advised of the buyer's need, and the system will report to the buyer when parts become available from the first supplier. In effect, the customer has placed a backorder with all the suppliers capable of furnishing the item. This can greatly decrease the time to completely fill an order. The customer can receive weekly reports showing all the suppliers' shipping promises. Thus, any time consuming telephone follow-ups may be eliminated.

The warehouse, operating efficiently because of the two or four storage area system is capable of shipping

many orders with minimal labor costs. The number of warehouse locations is minimized by the high density storage capacity.

The supplier likewise saves money and gains other advantages with the present system and method. He can minimize his warehousing costs by wholly or partially maintaining his inventory in the warehouse system. Still further, the supplier can dramatically cut down on the number of inquiries he handles. He can save still more because his paper work in processing orders and bills is greatly reduced for all items maintained in the warehouse system*

A supplier also has access to a client base that may never contact him otherwise. Once a buyer places an inquiry for a part which the supplier maintains in the warehouse system, the buyer must see the supplier's offering regardless of his intention. This then, gives the supplier considerably more exposure than would be possible in a normal trading environment. Since there is no need for a buyer to make phone calls to specific suppliers, the supplier who maintains a desired item in the warehouse system is able to "bid" on the order without employing salesmen's time and without having been previously known to the buyer.

Ultimately, the electronic funds transfer system virtually guarantees payments to the supplier and maximizes both the supplier's and buyer's use of the funds. The great reduction in the typical accounting procedures necessary to process payments for orders, including pursuing bad debts, is yet another advantage.

As can be clearly seen, the present invention yields substantial improvements over prior systems. Other features and advantages of the invention are set forth in the following description and drawings.

DE DESCRIPTION OF THE DRAWINGS
In the drawings.

Figure 1 is a schematic diagram of an ordering system constructed in accordance with the present invention; Figure 2 is a flow chart illustrating the computer program and operating steps taken by the user in using the system as a buyer; Figures 3-5 are further flow chart diagrams illustrating detailed features of the flow chart of Figure 2; Figure 6 is a flow chart illustrating the operative steps of the billing procedure of the ordering system of the present invention; Figure 7 is a warehouse layout in accordance with one embodiment of the warehouse system of the present

invention; and

Figure 8 is a warehouse layout in accordance with a second embodiment of the warehouse system of the present invention.

EO GENERAL DESCRIPTION

Figure 1 illustrates schematically a portion 30 of the system of the invention. The system portion 30 includes

central data processing equipment at a first station 32 in the warehouse (Figures 7 and 8), and two separate sets of input/output equipment at two other stations 34 and 36 each of which is labelled "Buyer or Vendor" in Figure 1. Since the equipment of each of stations 34 and 36 is essentially identical, except for programming, the equipment at either station can be used either by buyers or sellers, or simply for communications purposes.

Although only two vendor or buyer stations 34 and 36 are shown in Figure 1, it should be understood that it is preferred to use more stations than two,

In the preferred embodiment of the invention, the central processing station 32 is located at the public warehouse, and each of the remote stations 34 and 36 is located at the offices of a different business concern. A warehousing firm owns and operates the warehouse, and makes its data processing equipment and services available to the others.

The central data processing equipment located at the warehouse includes a computer CPU 38. The computer preferably is a moderately high-speed, high-capacity computer such as a minicomputer; the computer can be any general purpose digital computer having a sufficient speed and capacity for processing data in the system. Also located at the central processing station is an input/output device 40, comprising a keyboard and screen, which is used for programming purposes, a set of disk files 42, and input tape file 44, an output tape file 46, a printer 48, and a modem 56. The input tape file 44 includes means for reading into computer memory data supplied on magnetic tape by buyers and vendors to be stored in the system. The disk files 42 are used for data storage, along with the RAM memory in the computer itself.

The tape file 46 is used to read out data accumulated for buyers and vendors and supplying that data to the printer 48 which is used to print out reports to be sent to the buyers and vendors at periodic intervals.

The modem 56 is used for sending and receiving data over telephone lines 56, 58 and 60 to the modems 54 of the various vendor and buyer terminals. The equipment at each of the vendor and buyer terminals includes a computer unit 50 including a keyboard

disk file and video display screen, and a printer 52. The computer 50 can be any suitable small computer such as the IBM Personal Computer or any equivalent machine. The computer 50 has RAM storage as well as disk storage.

It is preferred that the screen of each of the computers 50 incorporate a color display. This tends to enhance the rapid identification of different items of information which appear on the screen.

The preferred embodiment of the invention operates, in general, as follows.

A variety of different buyers, usually distributors, and vendors, usually manufacturers, subscribe to the service provided by the owner of the equipment at the warehouse location 32. Each vendor compiles a list of products that it offers for sale in the regular course of his business. For example, such products might be fasteners.

Each vendor rents space in the warehouse, or pays a storage fee based on the number and size of the containers in the warehouse at a given time. The vendor then stores an inventory of his products in the warehouse space and provides a list of prices for these products. This information is input to the computer 38 at the central station 32, either by reading the information into the computer storage by means of the input tape file equipment 44, with the tapes having been prepared by the vendor, or by the supplier keying the information in at the keyboard of the input/output unit 50. The part number and quantity/price quotations for each of the parts stocked or otherwise offered for sale by each vendor are input into the computer 38.

When a buyer wishes to use the system to determine which vendors carry one or more specific items, and the prices charged by each vendor, he inputs the part numbers of the items, the quantity of the items he desires to purchase or desires a quotation on, and the computer 38 displays on the screen of the buyer's terminal 50 a list of vendors which maintain an inventory of the item in the warehouse, the item, the price for the specific quantity desired by the buyer and the inventory and price level for the item. The computer 38 maintains inventory information for the items in the warehouse.

When it is desired to actually place an order, the buyer sends his order electronically to the central computer 38 which prepares the necessary paperwork for the rapid and efficient picking, packing and shipping of the order from the public warehouse.

A single warehouse system is provided for storing items manufactured or sold by a number of different

suppliers or vendors, The items stored in the system are all owned by the supplier or vendor who provides them, They are not owned by the warehouse system proprietors.

The warehouse system comprises one or more warehouses each having storage racks, conveyors, scales and other typical warehouse fixtures. All the warehouses are linked together by the central computer 38 (Figure 1) to create a single warehouse system. The central computer 38 directs the movement of all items in the warehouse. The central computer 38 also receives orders in accordance with the procedure and system described above. These orders are filled through the warehouse system in accordance with directions from the central computer 38, The suppliers or vendors (the users of the warehouse system for storage purposes may be manufacturers as well as distributors) are obligated to maintain their own inventory levels in the warehouse system. While the central computer 38 can indicate restocking points and generally low inventory levels, the supplier restocks at his own discretion.

As indicated above, a supplier or vendor sends particular items, or his entire inventory to be maintained in the single warehouse system. It remains entirely at the supplier's discretion which items are maintained by the warehouse system and at which warehouse location, A supplier ships its products to the warehouse system preferably in unmarked boxes, With its own input/output device the supplier or vendor can then monitor the status of its products in the warehouse system. Even while his products remain in the warehouse system the supplier maintains ownership of those products. ownership is only relinquished when the items are shipped out of the warehouse system to a particular buyer.

This system permits a supplier to either eliminate his warehouse entirely or simply pass on fast moving items which are sold in smaller quantities. Even though the supplier maintains ownership of the products he is no longer responsible for preparing quotations or processing purchase orders and bills. The supplier still maintains complete control over the selling prices and can set different discounts or adders for individual customers.

Other valuable features of the invention will be discussed in the more detailed description which follows.

F, DETAILED DESCRIPTION

ORDERING SYSTEM

(a) Start-up

Figure 2 is the buyer flow chart which illustrates the step followed by the buyer and the computer 50 at the buyer's terminal 34 or 36. The start up of the computer 50

(see Figure 1) at the buyer station 34 or 36 is indicated at 62 in Figure 2, The computer 50 (preferably a personal computer like the IBM PS/2 Model 50) is programmed to provide a routine, indicated at 64, in which the operator enters a password and/or an account number for the company by which he is employed, as indicated at 66. The computer 50 decides, as indicated at 68, whether the password and account number are valid. If not, the routine is ended as indicated at 70. If they are valid, the computer displays a menu screen as indicated at 72. Each of the tables which is set forth in the following text is a reproduction of the information which 35 appears on the screen of a video monitor at a buyer, vendor or warehouse station.

Table I shows the first "screen" which appears at the end of the start step 62 in Figure 2.

vZZMM 20 UZ Irar:== M=
 PI"" enter YOUT Pa"WOV42
 Table 11 shows the first menu screen (the Distributor master Menu Screen) which appears in Stop 72*
 TABLI 11

4
 12345478*91234\$6701:1334\$9769:1234547896
 123456789:1234SGIS9:&234\$679970123416709:123
 sham Km 9721"21
 3
 Is Inquiries 4
 2, Order gatry
 7
 31 Asmorwatle"
 4@ Zone Insane vskerlot is
 as
 #Am&&% Prior 811ILog Data from ftistral la
 13
 feint " or emprod orders 14
 1
 1.

9- PCOMMINGIN 11W Data rven Control 17
 Blume I.

so Now Data Prom central I
 119
 as
 PLXAU ONTIC TM EZLOMZON 22
 113
 1 24
 not I TM tint 6 optives ass the entry rw*t are POMamatil an the "ro"o the
 aten will tons 644 OilbOr 09 Use 2 &&St P
 8018 options defending on wimuser of met Users is
 "to to the IMMM04 batek file,
 BY selecting option I an this screen, the inquiry

screen in Table III can be call-ad up,
TMLZ III

4
1234S#79"123459709:13343478901234541494123454789:1234S\$?89:12345474970122
4Sglgg:&23
1a ZL3LJM= ROME zmj= AM GM 23
I IAN" 129 3400 4
a Sniesse :2@0 25000
3 19=4328 V141412
4 immatea 7
is
13
14
is
is
11
s@el" 5600 PA= 4,3S X Me 3344 0 to
2=1 ::7; x 4090 Slat 0 21
80111" privet to evotowers \$414111 111312 7 is 3 "in 22
n/22foo "Lus vogismaglav Co. RNP"to order In two weeks 23
A" Sent It"# I 31 BO" ANPLCT# 2 a Usert I"uLX7# 3 a Delete Uslo Itien as
notes Onto below the dotted line 1a the prior 1"Viry asmord dieplay,
Thoro were 2 *"pilots otterlaq this item. It even th" two vapplion %44
q"t*4# a sovell option WO 90/11572 PCr/US90/01485

(b) Item Incruiry Screen

Assume that the buyer has selected option 1 on the main menu screen, namely, to display the item inquiry screen. Referring to Figure 2, this selection process is indicated at 74, It usually will be made by using one or more key strokes on the keyboard of the computer 50 at the buyer station 36, Alternatively, the selection can be made, if the screen of the computer is of the "touch-screen" variety by merely touching the number of the option selected, or by the use of a "mouse" by moving the cursor with the mouse and touching a button.

The completely inquiry procedure is illustrated in the flow chart of Figure 3. This includes the entire inquiry input phase which takes place at the buyer's terminal (indicated at 76 and 78 and the processing phase of the inquiry (indicated at 80-98) which is performed by the central computer 38.

The buyer is usually a distributor who is buying products to fill an order from one of his customers. When the inquiry option is selected, the operator may begin by designating a customer in connection with this inquiry. If he wants to store the inquiry for later recall, and limit the matches only to this customer, then this entry is mandatory. These customer account records may be stored in a file in the buyer's computer 50 and will never be sent to the central computer 38. This ensures the confidentiality of the identity of the buyer's customers, To designate a customer, the operator can enter

the customer account code or the customer telephone number.

If he wishes, he can enter a few letters of the customer name, and a listing of accounts starting at that point will be displayed so he can choose the desired account.

The operator must enter an item or part number as indicated at 76 in Figure 3, The item number can be, for example, military part numbers or similar part numbers selected to facilitate the alpha-numeric identification of a substantial number of fasteners, electronic components or other small parts. In any event, the part numbers are the same for all users of the system, If the operator is entering a part number for a generic type of fastener, the part number can be generated by a series of table lookups, If this option is accepted, the full description of the part can be displayed for verification on the line below the item number, The description is completely generated at the buyer's terminal and is not sent to the central computer 38.

Items may be identified by more than one part number. The system also offers the buyer a table of interchangeable part numbers so that the buyer may enter any of the applicable part numbers and will be assured of getting the correct part, In addition the system permits the buyer to enter substitute part numbers for items that are slightly di

fferent from the basic part number. These substantive parts may be offered only on quotations when there is an insufficient quantity of the basic part in inventory.

The buyer may also activate a history recall module if desired, This module can be set to display matching items for any customer, or only this customer, If activated, any inquiry or quotation that was previously stored in the buyer's computer will be displayed immediately after the item is entered. This step also is performed entirely at the buyer's terminal, After entering a part number, the operator occasionally must enter a suffix number, A suffix number is associated with only a small percentage of items because of additional variations from a standard designation, If the suffix number is known it should be entered. However, if the suffix number is not known an asterisk may be entered and all variations for that basic item will be listed. The next step requires the operator to enter the quantity of the particular item desired, as indicated at 78, If prices for several different quantities are desired, -the largest quantity should be entered.

When the inquiry entry is complete, including all

will also be getting a quote from R & R Pastenorso 2
 LN PART NUMBER SUFFIX INO OTY fi= COST U/I DX OTY STOCK PRODCTN 3
 LAMS0412B 3000 ACME 12e00 M 4000 21685 7SO00 4
 DITTO 3000 SENI BELOW H 3SOO 7SOO- 0 5
 QUANTITY 0 100 1000 5000 IS000 6
 PRICING IS,S2 14e35 12*80 12o3S lieso 7
 DITTO 3000 TITA 12e44 M Soo 0 SS000 8
 ADDIL INVENTORY CARRIED AT TITANIC IMPORTSj CHICAGOj, IL* PHONE (312)
 5SS-1212 9
 IAMS0420D 2SO00 NOT LISTED 10
 S 1GBC1432E P14412 1000 GYRO 6eS5 C 2000 17SOO 0 11
 IBWD0816A SOOO ACME 4o3S M S000 3344 0 12
 DITTO 5000 ZENI 4*23 M 5000 26S33 0 13
 LK PART NUMBER SUFFI INO OTY SPLR SELL U/I REMARKS 14
 I IAHS0412B 3000 ACME 22*1S M 3 days is
 IAMS0420D 2SO00 EXEL 38*00 M 4 WKS Phone quote is
 IGBC1432E P14412 1000 GYRO 9690 C 3 DAYS 17
 IDW00816A 5000 ZENI 8*77 X 3 DAYS is

19

20

21

- 22

23

0 = ENDO I PRINT# 2 STOREF 3 PRINT AND STOREO 4 = RESCROLL ITEMS 24
 Note: The system allows the operator to enter prices quoted to the customer. They are listed with a separate heading below the last item quoted. For convenience, the salesman also entered a price quoted for item line 4 by a phone quote from 11EXELIN o
 While it is not shown as an option on the Customer Inquiry Reply Screen, it is possible to modify the system to permit order entry from this screen. The operator would either retype the appropriate order information in a special portion of the screen, or simply highlight the items desired,

(c) Item Ordering Screen

When the operator has determined which items he wishes to order he types a 101 to exit from the Inquiry Reply Screen and to return to the Master Menu Screen, At the Master Menu Screen (see Table II) the operator chooses option 2, Order Entry. The Purchase Order Screen is then displayed. This screen is shown in Table VI, below. The Order Entry process is illustrated in the flow chart of Figure 4,

TABLE VI

2 3 4 5 6 7 8

12345678901234567890123456789012345678901234567890223
 4567890123

Purchase order Reader Screen System order number: 31

Ship To: Distributor order no, 2

ship viat 3

Drop Ship (YIN)t N 4

Customer order no. 5

LN PART NUMBER SUFFIX ORD OTY SPLR 7

1 IAMS0412B 3000 ACME 8

2 IGBC14323 P14412 1000 GYRO 9
3 Please pack above item in cardboard carton by itself. 10
4 IBWDOSIGA 5000 ZEN1 11

12
13
14
is
is
17
18
19
20
21
22
23

Add new item, I End Xt*a Entry# 2 Abort order 24

The top part of the Purchase order screen is called the Header Screen, This Header Screen need only be filled in completely when the shipment of the order is other than directly to the buyer by normal freight. The Distributor order no. and Ship via fields must always be filled by the operator. If the Drop ship code is IYI the Customer order no. field and Ship To field will also be filled in by the operator, If the Drop ship field is IN' the buyer's warehouse name and address will automatically be displayed.

In order to begin placing an order, a 101 is entered to permit an item (indicated at 102), quantity (indicated at 104), and supplier (indicated at 106) to be entered, The operator may input this information by consulting the buyer's printed copy of the inquiry reply.

Alternatively, this information may be transferred from an inquiry reply which was previously saved-in local the computer's memory. It is not necessary to enter an item on every line. Comments can be entered to let the warehouse know how to handle a particular portion of an order. If at any time the operator wishes to abort the preparation of an order, he may do so by selecting option 121. It should be understood that this entire order entry procedure is accomplished off-line on the local computer.

once the order entry is complete, the operator selects option 111 to signify this completion and the entire purchase order is sent, in batch, to the central computer 38, Upon receipt of the order, the central computer 38 first checks to insure that the buyer has any remaining credit, indicated at 108. (As a subscriber to the system, the buyer must establish a stand by letter of credit with a particular bank in order to purchase any items.) If the buyer has credit, the quantities requested are examined against current warehouse inventory (indicated at 134), If the quantities requested do not exceed the inventory then

the total monetary value of the order is calculated and compared to the value of the buyer's currently available line of credit (indicated at 122). If the amount of the order does not exceed the buyer's credit, and all previous criteria have been met the order is accepted (indicated at 126) o A sample Order Acceptance Screen is shown in Table VII, below.

i@
TA33LE VI",
1 2 3 4 5 6 7 a
123456789012345678901234567890123436789012343678901234567890123
4567890123
Purchase Order Header Screen System order number: whyrjulseq I
Ship To: Distributor order nos 2
Ship via: 3
Drop Ship (Y/N): N 4
Customer order no. 5
LN PART NUMBER SUFF1 ORD OTY SPLR COST U/I EXTENSZO BKN B 7
1 IAHS0412B 3000 ACHE i7isoo m 36e00 1*50 a
2 1GBC1432E P14412 1000 GYRO 6*55 C 65*50 1*50 9
3 Please pack above item in a cardboard carton by itself. 10
4 IBWDOSIGA 5000 ZENI 4s23 M 21*25 11
12
13
14
15
17
is
19
20
21
22
Shipping weight: 62.4 lbse Total adze cost (incl \$2.00 shp chg): 0127*65
23
0 = Print orderp I End intry Estimated UPS charges: \$3*17 24
The acceptance screen supplies a system order
number, the shipping weight, the cost of the goods including
all extra charges and the estimated shipping charges.

If the buyer's credit is not good, he is precluded from transmitting his order (indicated at 110). If the buyer's credit is insufficient or one or more items are not in stock in the necessary quantities, the central computer will send an order rejection (indicated at 120 and 136, respectively) which is displayed as an Order Rejection Screen. A sample order Rejection Screen is shown in Table VIII, below.

TABLE VIII
2 2 3 4 5 6 7 a
123456789012345678901234567890123456789012345678901234567890123
4S67890123
Purchase Order Header screen System order number: whyrjulseq I

Ship To: Distributor order no. 2
Ship via: 3
Drop Ship (YIN): N 4
Customer order no* 5
LN PART NUMBER SUFF1 ORD OTY SPLR COST = OTY AVAX 7
1 IAHS0412D 3000 ACHE 12*00 X 3000 8
2 IGBC1432E P14412 1000 GYRO 6655 C 1000 9
3 Please pack above item in a cardboard carton by itself* 10
4 IBWD0816A 5000 SENI 4,23 M 3500 short 11
12
13
14
15
16
17
is
19
20
21
22
ORDER REJECTEDe INSUFFICIENT QUANTITY AVAILABLE* 23
0 = End entry# I = Print screen 2 = Modify order for reentry 24
If the order is rejected for credit reasons it can
be modified to an acceptable total monetary value. If the
order is rejected for insufficient stock it can be modified
to limit the quantity ordered to the amount in stock or
less.

If a particular item is not available in a
sufficient quantity in the warehouse, it may be reserved
through the reservation system.

(d) Reservation System

There are no backorders allowed in this system.
Experience has shown that back ordered products tend not to
be available on the promised date or are no longer needed by
the time they arrive. Instead, in the present system, the
buyer can reserve an item that is not available from stock.

This reservation process is illustrated in the flow chart of
Figure 5. The buyer can designate that the particular item
come from the first supplier having the part available or he
can specify that the part must come from a one supplier.

The buyer may inquire, through the system, to get
the scheduled delivery date for all items that are currently
in production by the supplier. These dates are subject to '
revision as the supplier schedules his production lines and
thus cannot be guaranteed.

When the reserved parts are received in stock, the
buyer will be immediately advised of that fact by the
central computer during (indicated at 166) an off-hours
transmission to the buyer's I/O device and the reservation

21
22
23
24
TABLE X
1 2 3 4 5 6 7
123456789012345678901234567890123456789012345678901234567890123
4567890123
Item: Suffix: 11111111 Supplier: Quantity: 1111111 I
Supplier Remarks: 2
internal Remarks: 3
Supplier: 1111 Due date: xx/xz/xx Qty in prod: 11111111 Ord No: 4
Supplier: 2222 Du* date: yy/yy/yy Qty in prod: 22222222 Ord No:
222222222 5
6
Item: 33333333333333333333 Suffix: 33333333 Supplier: 3333 Quantity:
3333333 7
Supplier Remarks: a
Internal Remarks: 9
Supplier: 3333 Due date: zz/zz/za Qty in prod: 33333333 Ord No:
3333333333 10
11
12
13
14
is
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17
la
Is
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It is also possible to obtain a summary of a
buyer's outstanding or shipped orders at any time. By
choosing option 151 on the Master Menu Screen, the system
returns a summary of all orders. The summary includes: the
system order number; the buyer's order number, if any; the
method of shipment; the date shipped; the shipping charges
and the order value. (see Table XI).

TABLE XI

2 3 4 7
123456789012345678901234567890123456789012345678901234567890123
4567890123 SYS ORD NO* ST YOUR ORDER Me DS BUMPED) VIA DATESHIP SHPCHG P
ORD VAL* ITH 1
01890120024 30 J983241 N UPS 04/17/89 4o27 P 129o43 4 2
3
4
5
6
7

a
9
10
11
12
13
14
is
is
17
is
19
20
21
22
23
24

(e) Billing Procedures

As stated above, the Buyer is obligated to maintain a letter of credit with a bank before he will be permitted to purchase any items. The billing procedure is illustrated in the flow chart of Figure 6. The letter of credit can be for any amount designated by the buyer. For ordering purposes, the total of all unpaid invoices and new orders cannot exceed the credit amount.

In practice, the buyer's designated account will automatically be debited on the final billing due date through an electronic funds transfer program (indicated at 174). This gives the buyer the maximum benefit of the float. In order to keep the buyer apprised of these transactions, he will receive a report recapping the details of each invoice submitted in the prior billing period. The total of this listing will be debited from the buyer's account on the date specified (indicated at 174) (the last day of the billing period). This report is downloaded from the central computer 38 to the buyer's computer during offhours, in batch.

The suppliers will simultaneously be credited for the value of their parts that were shipped, by the same electronic funds transfer program (indicated at 170). They too will receive a report detailing the items shipped and their destination. This report is also downloaded from the central computer 38, during off-hours in batch,

2* WAREHOUSE CONTROL SYSTEM

(a) Receiving and Storage

Referring now to Figure 7, items are received at one end of a warehouse 184, and stored temporarily near the receiving door in a temporary storage area T. The containers for each item are brought together, and a receiving entry is made into a nearby terminal 186 which is linked to the central computer 38. Individual labels are printed for each container that indicate which random

storage location the container is to be stored in, (See Table XII, below). A bar code label is also affixed to each container to identify the individual container. The computer record for each container will carry the shelf or pallet location, the part number, the quantity in the container, the supplier identification code, the date received, the supplier production order number, the source batch control number, the gross weight of the container and the bar code record. (See Table XIII for the screen used to enter new receipts).

TABLE X11

RECEIVING LABEL Key to Label
08/25/88 4 JR 12@44-37 A B C
JR 12@44@37 D
ARD0416FG 37jrOOO E F
4@40 X 1/2 PHIL PAN MS ZINC

G

ORD# J27119 CTL# 1299@4128 H I
KEY.

A= date received
B= Self check digit
C= Shelf location, small print
D= Shelf location, large print
E= Part number
F= Quantity in container
G= Description
H= Production order number, by supplier
I= Batch source control number, by supplier
TABLE X113.

2 3 4 5 6 7
123456789012345678901234567890123456789012345678901234567890123
4567890123
(Supplier name# city# state, contact and phone will go here) I
Supplier code: 1234 Replenishmnt No: 12345678901 No antra shpd: 123 2
Xtem No: 12345674901234567990 SUFFIZ9 12345678 Total qty shipped:
12345678 3
(Description will be shown here) 4
5
No OUTra actUally r*Cd: 123 Pas/PoUnd: 123456@7 6
7
Batch ctl no: 123456789012 Xnap cartif no: 12345678901 a
9
10
Cntr type Cntrs recd Qty/cntr Gross wt/antr Extension Hot wt/antr 11
123 12345678 123A 1234SG78 123*4 12
13
14
Is
16
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is

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Two storage procedures may be employed in the warehouse system. The first system provides for two storage sections, "All and IIBII as shown in Figure 7. Section IIBII 188 is for all full and sealed containers, while section "All 190 and 192 is for all open containers. Only one open container of each item is maintained.

When containers are received in the warehouse, they are initially assigned a IIBII storage location. only one open container of a particular item can be stored in a single "All storage location. The "All containers can be further divided into two categories, such as cartons 192 and kegs 190 (e.g, cartons will weigh up to 50 pounds and kegs will weigh over 50 pounds), The sole purpose for this division is that when fill orders for partial container quantities are filled, the carton is brought to a counting scale, while a counting scale is brought to the heavier kegs.

When items are retrieved in response to an order, the required amount is retrieved first from unopened containers in the IIBII section. The remainder of the order is then filled from the "All section. If the amount in the container in the "All section is still insufficient, then before the current "All container has been exhausted,, a container is brought from the IIBII section,, which after filling the balance of the order, replaces the original "All container in the "All storage section. Since the "All section is very small and located near the shipping area, and since the majority of odd lot orders will be filled from "All containers, a large labor savings is realized. This is because the need for order pickers to traverse the entire warehouse when filling an order from an open container is eliminated. With the present system, it is not necessary to bring an open container to a scale and then return it to a shelf which may be located at the far end of the warehouse, The second storage procedure employs four separate storage areas designated "A", "B", "IC" and "ID" as shown in Figure 8. Storage area "All is virtually the same as area "All in the previous system.

The IIBII area 3.881 is for full containers. only one container will reside in each location, Further, the IIBII area 1881 is subdivided into sections by container size, The "IC" area 210, like the IIBII area 1881,, is also for full containers. However, in the "IC" area 210,, each location is capable of storing multiple containers of the same item and batch. It too is subdivided into smaller

sections according to container size. By storing multiple container in the same shelf location, space is saved by eliminating intervening shelves.

The I'D" area 212 is for full pallets of incoming containers. If the entire pallet consists of cartons or kegs of the same item, the most efficient way to store them is on the pallet without removing the containers.

In order to maximize efficiency, only containers of the same size can initially be stored on the pallet in the I'D" area 212. The system will subsequently allow different items to be moved to the same pallet if the containers are of the same size. This will only be done if there is a shortage of empty pallet locations.

This second system is designed to maximize the density of storage while minimizing the labor to handle the containers and pallets. In order to do this, certain guidelines are followed by the system.

(a) When an entire pallet contains only one item, the pallet is stored in the I'D" area 212 in a vacant pallet location. When such a pallet is stored, the system designates it as a pallet with a particular container size.

once assigned, the container size remains constant as long as there are containers on the pallet. After the location becomes vacant, a different container size may be assigned.

(b) If no vacant pallet locations are available, the system reports which pallets have the fewest containers and which pallets have the same size containers with space to receive more. Thus, by filling up pallets wherever possible, maximum density of storage is achieved.

As with the IIBII and 'IC" areas,, and the first system, containers may be removed from the I'D" section either to be shipped directly to the customer or to replace a container in "All that has been depleted.

(b) Order Filling

Orders will be picked in a batch environment, This means that only a group of orders will be picked at any given time period yielding far greater efficiency.

In practice, individual items to make up each order, are picked and brought to a central point where they are consolidated with all the items for a particular order.

All orders which have two or more items are assigned a "cubby hole" or space location where the items for an order will be accumulated. The central computer 38 calculates the weight and volume required for that order and assigns a

cubby hole in the consolidation shelves area 198 large enough to accommodate all the items. If more than one order in the batch is being shipped to the same designation, each order is flagged so that they can be combined in a single shipping container.

Three sets of labels and two sets of documents are printed for each batch of orders. These documents and labels control the movement of containers from the "B" area to the customer to the "All area to the customer, and from the "B" area to the "All area. one set of documents is the actual picking lists that will eventually be included with the shipment. The other set of documents lists the "All to customer shipments, This set of documents is actually identical to the set of "All to customer labels,, but contains additional information which is used in conjunction with an "All control card. These labels and documents include bar codes that are checked against the labels pasted on the containers so that the shipment of the correct parts is verified.

As indicated above, one set of labels, the "All to "B" labels, controls the movement of full "B" containers being sent to the "All area to replenish an "All box that will be exhausted, (See Table XIV). These "B" containers are pulled first to enable the "All to customer counts to proceed.

TABLE XXV

"B" TO "A" LABEL Key to Label

09/12/88 7 JR 31@72@81 A B C

D

JR 3F72@81

JR 12@44@37 08/25/88 4 E F G

ARD0416FG 37,000 H I

4@40 X 1/2 PHIL PAN MS ZINC i

ORD# J27119 CTL# 1299@4128 K L

KEY.

A =Date transferred from "B" to "A"

B =Self check digit for "A" location

C =Shelf location, small print for "A" location

D =Shelf location, large print for "A" location

E = original "B" location

F =original receipt date

G = Self check digit for original "B" location

H = Part number

I = Quantity in container

i = Description

X =Production order number, by supplier

L =Batch source control number, by supplier

4f

f

A second set of labels controls the movement of

full containers being shipped directly to the customer.

(Table XV), These containers are pulled after the "B" to "All containers have been pulled.

TABLE XV

"B" TO CUSTOMER LABEL Key to Label
09/12/88 4 JR 12 37 A B C
JR 12@44@37 D
FM 89137149 37FOOO F
TITAN ENTERPRISES CORPe 142 G H
IORD# TN772144 6 OF 11
KEY.

A =Date shipped from Fastener Mall
B =Self check digit
C =Shelf location, small print
D =Shelf location, large print
E =Fastener Mall system order number
F = Quantity in container
G =supplier's name, if shipped to distributor
Distributor's name, if shipped to distributor's customer
H =Cubby hole number
I =Distributor's order number, if shipped to distributor
Customer's order number, if shipped to distributor's customer
J =Container count OF total containers in shipment
The third set of labels is used to pick the "All to customer items (see Table XVI, below), If the items to be picked from the "All area are stored in cartons, the labels are given to a person who takes the cartons off the "All shelf and brings them to conveyors 200. The labels are placed in the open containers which are put on the conveyors 200 bringing them to scale count tables 194, The quantity necessary to fill each order is taken from the cartons, and put in small bags or boxes. The "All to customer labels are pasted on these containers. The original "All cartons,, or "BO' to "All carton, if any were needed, are placed on a return conveyor 200 which carries the cartons back towards the "All area, The same process is followed for "All kegs, but since kegs are much heavier, the scale is brought to the kegs at 190.

TABLE XVI

"A" TO CUSTOMER LABEL Key to Label
09/12/88 7 LTR 31@72@81 A B C
JR 3F72@81 D
ORDt J27119 CTL# 1299@4128 F
FM 89137149 4 215 G H
TITAN ENTERPRISES CORP* 142 I i
ORD# TN772144 2 OF 3 K L
KEY.

A =Date shipped from Fastener Mall
B =Self check digit

C =Shelf location, small print

D = Shelf location, large print

E = Supplier production order number

F =Supplier batch control number

G =Fastener Mall system order number

H = Quantity in container

I = Supplier's name, if shipped to distributor

Distributor's name, if shipped to distributor's customer

J w Cubby hole number

X =Distributor's order number, if shipped to distributor

Customer's order number, if shipped to distributor's customer

L =Container count OF total containers in shipment

The person counting the parts, has a computer

printed report listing the same data that is printed on the

labels, The report also includes additional data that is

used with information printed on a card which is pasted to

the front of each "All container, This "All Control Card is

used to keep a running balance of the quantity of parts

remaining in the container, The card also assigns a

sequence number for each transaction which results in the

removal of parts from the container or which brings a new

container from the "B" area, The posting of such

transaction data from the printed report to the control card

is an additional guarantee that the correct parts are being

shipped to the customer. (This control card is explained in

detail below).

When a number of "All to customer items have been picked, the containers (bags or small boxes) of those items are placed on a conveyor 204 which brings them to an assembly table 196. The second printed document list which is a packing list is ultimately sent to the customer with his order. This document is sent to the assembly table 196 prior to the arrival of picked cartons. If the order calls for two or more items, this packing list is placed into the appropriate cubby hole to await all the items, If the order calls for only one item, the packing list is held at the assembly table 196 without placement into a particular cubby hole, In such a situation, the item is sent to the shipping area S, via conveyor 202, as soon as it reaches the assembly table 196. In an order requiring a plurality of items, the containers of those items are placed in the appropriate cubby holes based on the cubby hole number printed on each label. When the last item has been brought to the cubby hole, the order is sent by conveyor 202 to the shipping area S 4

The shipping area S has two locations. The first location is for heavy orders which require shipment by commercial freight 206. The second location is for lighter orders which can be sent by UPS or the like 208.

When items are received, in addition to the production number from the supplier, a source batch control

number is printed on the label which is placed on the face of each carton, These numbers are also recorded in the computer record for each container, When any container quantity is to be shipped, these reference numbers are again printed on the label that will be pasted on the front of the container in which the item will be shipped. These numbers are also printed on the packing slip and invoice and are retained in the computer memory for a number of years after shipment.

The use of this source batch control number facilitates the cross-referencing to every container associated with each separate lot contained in a shipment.

Thus, if certain sensitive items require special inspection processes, and the inspection documentation must be sent to the customer with the parts, the inspection documents, including applicable certificates, can be electronically scanned when the parts are first received. This data can then be held in the computer memory. Whenever an order calling for these special containers is processed, the inspection documentation automatically prints along with the packing slip and invoice.

When the original receiving label is pasted on the front of an incoming container, it includes a "self-check" digit. This is a parity check that validates the shelf location number. When the label used to ship the container or move it to the "All area is printed, it will show the same self check digit. This new label will be pasted next to the original incoming label, and the two self check digits will be compared and circled by the stock person. If the two check digits do not match, the wrong container was pulled.

Parts which come from an "All container also have a fail-safe control, This control comes from the "All control card which is pasted to the front of each "All container.

(See Table XVII, below), The card functions similarly to a checkbook record, The quantity removed is subtracted from the prior balance and any additional quantities (via "B" to "All container transactions) are added, The card also shows the transaction quantity, the new balance, the date, the transaction number and the warehouse person making the transaction. This same data is printed on the report used by the person at the scale count tables 194, When that person receives the container, he must transfer this data from the report to the control card, and enter his initials and the date, If the opening balance does not match, or if the transaction number is different, the wrong container has been pulled. If an error occurs, the transaction can be reconstructed and the record set straight between the two items; the one that should have been shipped and the one that was actually shipped.

TABLE XVII

JR 31@72@81 7 09/12/88
ARD0416FG 4@40 X 1/2 PHIL PAN MS ZINC
746 ORD# J27119 CTL# 1299@4128
89127135 785

0
LT 08/04/88 36,215
89127491 25s000
LT 09/02/88 11j215
89131337 21000

2
LT 09/06/88 9r215
89136293 5,000
LT 09/11/88 4v215
89137028 4r215

4
LT 09/12/88 0
JR 12@44@37 37,000

5
LT 09/12/88 37p000
89137028 5j785
LT 09/12/88 31j?215
89137149 12j500

7
LT 09/12/88 18s715
89137517 5r000

8
LT 09/3.2/88 13,715

9
A sample "All control card is shown in Table XVII,
Each card is designed to hold twenty entries in two columns
of ten each. The digits 0 through 9 at the sides of the
card are preprinted. The label at the top of the card is
automatically printed by the central computer 38 after every
twenty entries, and is included in the sequence of "All to
customer labels. The two digits, in this case 46 and 47,
printed on the label in the lower left and lower right
corners, are the first two digits of a three digit sequence
number referred to in the "All to customer listing. Thus,,
the top entry in the left column is really sequence number
460 while the second entry from the top in the right column
is sequence number 471, The next "All container label to
print for this item will have the digits 48 and 49 in the
two lower corners, and will be pasted on the next card. In
the example illustrated in Table XVII,, an "All container had
37,000 pieces. On 8/4/88, 785 pieces were removed for order
89127135. This left a balance of 36,215 pieces. On 9/2/88,
25,000 more pieces were taken out for order number 89127491,
leaving a balance of 11,215 pieces. On 9/6 and 9/11, two
more orders were filled leaving a balance of 4,215. This is
the starting point for the picking list shown in Table
XVIII. Order number 89137028 called for 10,000 pieces, but
the container showed only 4,215 pieces. Therefore, the

4,215 pieces were packed for the order and a new "B" to "All box was brought from the location JR 12 37 with 37,000 pieces in it. The balance of 5,785 pieces need to make up the 10,000 piece order was taken out and packed separately, With this approach, not only is the inventory verified as each new container comes from the "B" area to the "All area,, but it is easy to spot-check the accuracy of the parts in the "All container, Whenever desired, the parts in the open "All container can be counted, and this count should match the quantity shown as the last entry on the card. There is no need for an inventory cut-off nor is it necessary to check back with the computer since the card entries are actually controlled by the computer. Since both the card entry and removal of the parts occurs at the same time, the last card balance and the contents of the container should always be the same,

As indicated above, orders are maintained in the central computer 38 in accordance with the description provided earlier. Upon acceptance of an order, the central computer 38 can be called upon to create and print out an order picking list. An example of such a picking list is shown in Table XVIII,

TABLE XVIII

JR 31@72@81 7 ARD0416FG 4@40 X 1/2 PHIL PAN MS ZINC
REFERENCE NOs AMOUNT BALANCE SEQ NOo

4,215 463

89137028 4,215@ 0 464

JR 12@44@37 37j000 37,000 465

89137028 5j785 31r215 466

89137149 12,500 18,715 467

89137517 5jv000 13j715 468

JR 31@72@93 5 FJW1648FG 3/8@16 X 2 SOC CAP BRASS KI

Each item to be counted to fill an order is separated by a dotted line on the picking list, The data on the first line of each entry shows the "All box location,, a "self check" digit, the part number, and the item description. The transaction data will be copied to an "All control card by a warehouse operator, Before removing the parts from the box,, or making the "All control card entry,, the operator must verify the "self check" digit by circling it on this listing. Thus, when the data itself is entered, the operator will be verifying the opening balance and the sequence number, The first three columns of data are transferred to this "All control card as well as the date and the operator's initials. The sequence number is pre-printed on the control card and does not have to be entered, Table XIX, below, depicts a typical customer packing list, This shipment is going to a buyer, If it were being shipped directly to the buyer's custom

er, the

"bill to" would show the customer's billing address and the "ship to" would show the customer's shipping address. The order number would be the order number that the customer

gave to the buyer. The names "Zenith" and "Top Notch" are the supplier names. If the shipment went directly to the customer, these would both read "Titan",, the buyer's name, While the above order filling sequence has been described with reference to the "All and "Bit system,, the "A",, "B"01 licit and I'D" system functions in essentially, the same manner with the "Bit. IlCl1,, and I'D" locations simply constituting alternative storage areas for full containers. The purpose of these areas, as described above, is to improve warehouse flow and maximize storage efficiency and density. Thus, the additional 'IC" and I'D" storage areas do not impact the order filling process in any significant manner.

TABLE XIX

Sold To: Titan Enterprises Ship To.

123 Main Street Same

Hoboken, N.J. 12345

P.O. No. Shmpt No. Date Ship Via Page

TN772144 89137028 09/12/88 UPS 01/01

Quantity Items

40,000 AFM04LR Zenith

4@40 HEX MS NUT BRASS

41000 JR 87@91-14 CTL# 1017@8192 1

100,000 ARD1424FG Top Notch

4@40 X 1/2 PHIL PAN MS ZINC

41125 JR 31-72@81 CTL# 1299-4128 2

5j785 JR 31@72-81 CTL# 1299@4128 3

Weights are used as a secondary means to ensure that the correct parts are being shipped, As parts are received in the warehouse, the gross weight of each container is entered into the central computer 38, This weight, together with the original container quantity and container size, remains permanently in the record. When an order is to be shipped, the system calculates the weight of the entire order. When a partial container quantity is to be shipped, the weight of the quantity shipped is estimated as a percentage of the net weight of the original container.

This estimate is further matched against the actual net weight for each partial container quantity when the parts are on the counting scale. The counting scale reports the net weight to the warehouse local computer in conjunction with the bar code checks that will also be made (see below).

The estimated gross shipping weight of the order will be printed on the packing list as a guide for the shipping clerk.

As an additional control, the weight, quantity, container size, date received, and batch control number of the last container received are stored in the item number master record. As each new batch of items is received, the ratio of the new container quantity and weight is compared

to the old container quantity and weight, If there is a wide discrepancy the receiving clerk is notified and the matter can be investigated further.

(c) Bar Code Controls

There are two local warehouse computers or PC's in an individual warehouse 186 and 212. These PC's serve to off-load some of the work from the central computer 38, such as validation and data collection. The first PC 186 is for receiving and the second is for picking and/or shipping 212.

In the receiving area, the data required consists of open replenishment orders, the last receiving weight data on the inventory master record, the self container size file and the next available IIBIII 'IC" or I'D" area shelf locations.

In the picking and shipping areas, the order data is down-loaded to a PC after each batch of packing lists and labels is printed. The data includes information on all IIAIII "B"Al 'IC" and I'D" containers,, and the weight for each item. The full container weight will come directly from the receiving weight stored on the IIBII, 'IC" and I'D" container records. The partial container weight will be calculated from the full box weight in the container master file.

As a container is received in the warehouse, a bar code label is affixed to the face of the container. This bar code label may be either pre-printed or printed by the PC 186 at the point of entry into the warehouse 184, In practice, the bar code label is affixed to each printed location label which is also affixed to the container. As each printed receiving label is affixed to a container, the bar code is scanned and thereby linked with the record which supports the receiving label (Shown in Table XII). When the shipping documentation is prepared for printing, the appropriate batch of orders is downloaded from the central computer 38 to the PC for order picking and shipping.

Associated with the downloaded record of each order is the record of the bar code for each container.

As a container is moved around the warehouse, from a IIBII, IICII,, or I'D" location to be sent to the "All area or shipped, the same bar code label remains affixed to the container. As each new label directing the container to a particular location is generated, the original bar code record is retained both on the container and in the computer,

When a partial container quantity of an item is

required to fill an order, the "All container bearing its original bar code label, is brought to the counting tables 194. A person at the counting tables 194 enters the order number and scans the bar code label on the "All container.

From the counting tables 194, all containers which make up an order are sent to the shipping areas. At the shipping area, the bar code labels on each container are scanned. Before an order leaves a warehouse the PC 212 must verify that all the proper containers are in place.

3e SUPPLIER INTERACTION

As shown in Table XX below, a master menu, is available to each supplier which lists the options he may access in interacting with the warehouse system. The first option, Maintenance Inventory Records, permits the supplier to add or delete items to be maintained in the warehouse system and to change selling prices of the particular items maintained in the warehouse system. The Maintenance Working Tables option allows a supplier to designate his lead time to manufacture his product, to prohibit certain buyers from purchasing his products and to designate certain discounts or adders for individual customers.

2 3 4 5 6 7 a

1

3

5

7

9

11

13

is

16
Process Now Data From Central 17
Either is
No Now Data From Central 19
20
21
PLEASE ENTER YOUR SELECTION NUMBER 22
23
24

Note: The first 6 options and the entry prompt are permanently on the screen, The system will then add either of the 2 last options depending on whether or not there is data in the incoming batch file*

The option titled Replenishment Orders, permits the supplier to indicate when a new supply of a particular item will be sent to the warehouse system and in what quantities.

The Inquiry option is virtually identical to the inquiry option available to a buyer, In this case, it simply allows a supplier or vendor to determine current price and availability of parts for his own customer from his own stock in the warehouse system.

The option titled, Enter Order to Ship to Subscriber Distributer or Others, permits a supplier to place an order for any of his parts maintained in the warehouse system to be shipped to either a distributor who subscribes to the warehouse system or anyone else who deals directly with the supplier or vendor, The warehouse system does not build a barrier between the supplier and his customer. Instead it acts as a filter relieving both supplier and customer of laborious inquiries and orders for small quantities. The customer is encouraged to call the supplier for additional discounts on large quantity orders.

(see Figure 5, step 158) If such a discount is granted the order must be put in by the supplier so the system will know that the price is authorized. The entry of orders for non subscribers occurs frequently when the supplier maintains his entire inventory in the warehouse system. In such cases, all direct orders from the supplier to his customers are necessarily handled in this manner.

(b) Inventory Records

When the Maintenance Inventory Records option is selected from the Master Menu Options Screen, the screen shown in Table XXI is displayed. This screen is used to add a new item, change or delete data for an existing item, change descriptions for non-generic or generic items, and change descriptions for items with suffixes. It can also be used to add, delete and display alternate and substitute item numbers.

(c) Working Tables

If the supplier selects the Maintenance working Tables option, he is permitted to designate certain discounts and provide detailed lead time information. Table XXII below, is a Product Code Table. The Product Code Table allows the supplier to designate a discount or adder to be charged to all items belonging to that product code group,

TABLE XXII

V
I 2 3 4 5 7 a
2234S678901234S678901234S676901234S678901234S6789012345678901234S678901234S67890123

Prod Code % (+ or Description 1

2
01 6*2 + Brans screws under 1/4 dia 3
02 2el @ Brans screws 1/4 dia and above 4
03 000 @ All plated iteas 5

6
7
10
21
12
13
14
is
if
17
19
20
21
22
23
24

Similarly, the Distributer Discounts File shown below in Table XXIII, establishes specific discounts by code. By later associating that code with a particular distributor, the appropriate discount can be calculated,

TABLE XXIII

1 2 3 4 5 6 7 a
1234S678901234S67890123456789012345678901234S678901234567690123456789012345678901234567890123

Disc Code % (+ or 1

2
01 6*2 3
000 4
3al + 5
9949 6
7
a
9
10
it
12
13

In Table XXIV below, a sample screen for designating quantity discounts is shown. The supplier can enter any number of discounts as a percentage variation from the base price.

TABLE XXIV

10
11
1 4
1 3
1 4
is
16
17
is
19
20
21
22
23
24

TABLE XXV

```

1 2 3 4 5 6 7 a
12345678901234SG789012345678901234567890123456789012345678901234567890123

```

4567890123

code moo weeks Product Category 1

2

01 12 Brans machine screws under 1/4 di&* 3

a Brass machine screws 1/4 A OVer 4

7

a

9

10

11

12

13

14

is

16

17

la

19

20

21

22

23

24

The supplier also has the ability to specify price by particular unit of issue. He does so by selecting standard codes which indicate what units are being used to calculate prices, (See Table XXVI, below).

TABLE XXVI

1 2 3 4 5 7 a

223456789012345678901234567890123456789012345678901234567890123

4567890123

Code Group Multiplier Description 1

2

EX I I Each 3

C I 100 -Hundred 4

M I 1000 Thousand 5

FT 2 1 Foot 6

CPT 2 zoo Hundred feet 7

LB 3 1 Pound a

CLD 3 100 Hundred pound 9

10

11

12

13

14

15

16

17

La

19

20

21

22

24

TABLE XXVII

123456789012345678901234567890123456789012345678901234567890123
4567890123

2

13

is

17

19

21

23

And

TABLE XXVIII

123456789012345678901234S678901234S678901234S678901234S678901234567890123
4S67890123

2

4

6

a

1.

12
13
14
is
16
17
is
19
20
21
22
23
24

The last type of screen available under the Maintenance Working Tables option permits the supplier to create and maintain records regarding a buyer or distributor's discount, as well as the buyer's basic biographical information. A sample of one of these screens is set forth in Table XXIX, below.

TABLE XXIX

2 3 4 5 6 7 a

1234567890123456789012345678901234S6789012345678901234567890123456789012345678901234567890123

4567890123
Code: JL234 Date started: xx/xx/xx Discount: 12 1

2

Us": 12345678901234567890 Phone: (123) 123@4567 3

Street: 12345678901234567890 FAX: (123) 223@4567 4

City: 12343678901234S State: 12 Sip: 12345 Contact: 12345678901234567890

5

6

7

9

10

11

12

13

14

is

16

17

is

19

20

21

22

23

24

(d) Replenishment

If a supplier wishes to indicate when additional stock is expected to arrive to the warehouse system, he can do so by choosing the Replenishment Orders option. He can input the quantity in production as well as the expected arrival date (see Table XXX, below).

```
1 2 3 4 5 6 7 a
1234SG78901234S6709012345678901234567890123456789012345678901234S67890123
4567890123 Item number: 12345678901234SG7890 Suffix: L2345678 2.
```

a
9
to
U
12
13
14
is
16
17
is
19
20
22.

22
23
24
When an item is ready to be shipped to the
warehouse system, the supplier can update his replenishment
information through the screen depicted below in Table XXXI.

The supplier provides the quantity shipped, the method of shipment or carrier, the expected arrival date, the date shipped, and the number of containers shipped.

```

2 3 4 5 6 7 8
1234S6789012345678901234567890123456789012345678901234567890123
4567890123
Itan number: 12345678901234567890 Suffix: 12345678 1

```

```

2
Quantity in production: 12345678 Arrival date at Fastener Mall: 11/22/33
3
4
Supplier order number: 1234567890 System order number: 1234567890 5
6
Transaction type: xxxxxx Date actually shipped: an/dd/yy 7
a
Total quantity shipped: 12345678 Number of containers shipped: 123 9
10

```

Shipped via: 12345678901234567890 Batch control nuabar: 123456789012 11

12
13
14
is
16
17
la
19
20
21
22
23
24

4* THE INTEGRATED SYSTEM

As detailed above, the invention provides for a comprehensive warehouse and ordering system. The ability to provide an electronic quoting, ordering and billing system coupled with a public warehouse system in which suppliers retain ownership of their products stored in the warehouse system, yields remarkable efficiencies over any prior art system. The ability to ship items from a multitude of suppliers in a single shipment such that each item is purchased at an optimum price or from a particular desired supplier is likewise, a major improvement.

The above description of the invention is intended to be illustrative and not limiting. Various changes or modifications in the embodiments described may occur to those skilled in the art and these can be made without departing from the spirit or scope of the invention.

SUBSTITUTE SHEET

Claim

is A method for electrically ordering selected physical items, said method comprising the steps of:

- a) providing a computer with data storage and retrieval equipment at a first station;
- b) providing a buyer input/output ("I/O") device with a display screen at each of a plurality of buyer stations, each of which is remote from said first station and at least one other of said buyer stations;
- c) providing means for electrically transmitting and receiving signals

- between each of said I/O devices and said computer;
- d) storing in a single warehouse system the goods of a plurality of vendors;

e) storing in said computer the identities of said vendors and the items stored by said vendors in said warehouse system;
f) displaying on said screen of one of said buyer I/O devices a list of vendors who store a pre-determined item in said warehouse system; and
g) placing an order for said item from a selected one of the vendors listed by transmitting a signal to said computer.

2e A method according to claim 1, comprising the additional steps of:

a) calculating the monetary value of said order;
b) comparing the monetary value of said order against a pre-determined credit limit of said buyer; and
c) rejecting said order if said monetary value of said order exceeds the pre-determined credit limit of said buyer.

3e A method according to claim 2, comprising the additional step of storing said order in said computer.

SUBSTITUTE SHEET

4* A method according to claim 1, comprising the additional steps of:

a) electronically transmitting a signal from said computer to a bank to debit an account of said buyer in the amount of the monetary value of said order; and
b) electronically transmitting a signal from said computer to said bank to credit an account of said selected vendor in the amount of the monetary value of said order.

5a A method according to claim 1, comprising the additional steps of:

a) preparing an inquiry off-line from said computer by locally designating said pre determined item; and
b) electronically transmitting said inquiry to said computere

6o A method according to claim.1, comprising the additional steps of:

a) storing in said computer shipping information about said order; and
b) displaying on said screen of said one of said buyer I/O devices shipping information about said order.

7o A method according to claim 1, comprising the additional step of selecting one of said listed vendors offline from said computer prior to placing an order.

8* A method according to claim 1, comprising the additional steps of:

a) storing in said computer the base price and quantity discount information for each item of each vendor stored in said warehouse

system;

b) electrically transmitting a desired quantity of said pre-determined item to said computer;

c) calculating the price of said pre-determined item from each vendor based on said transmitted quantity and said base price and discount information; and

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d) displaying on said screen of one of said buyer I/O devices the base price, maximum quantity discount, and actual price based on said transmitted quantity for a pre determined item for each of said vendors who stores said pre-determined item in said warehouse system.

A method according to claim 1, comprising the additional step of providing a designation for each type of physical item stored in said warehouse system.

10* A method according to claim 1, comprising the additional steps of:

a) providing each buyer with an authorization code;

b) storing said authorization codes in said computer;

C) transmitting an authorization code to said computer from said I/O device of said buyer prior to transmitting an inquiry to said computer; and

d) preventing communication between said computer and said I/O device if said transmitted authorization code does not match one of said authorization codes stored in said computer.

11o A method according to claim 1, comprising the additional steps of:

a) detecting each instance a particular vendor's name is displayed to a buyer as part of said list of vendors who store a pre-determined item in said warehouse system; and

b) storing in said computer the number of times a particular vendor's name is displayed to a buyer as part of said list of vendors.

12o A method according to claim 1, comprising the additional steps of:

a) providing a vendor I/O device with a video display screen at a vendor station which is remote from said first station;

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b) providing means for electrically transmitting and receiving signals between each of said vendor I/O devices and said computer; and

C) displaying on said screen of one of said vendor I/O devices the number of times said vendor's name was displayed to a buyer.

13a A warehouse system comprising:

a) pre-programmed computer means for storing and retrieving the identities and locations of physical items offered for sale by a plurality of vendors and maintained within a single storage system; and
b) rack means for storing said physical items in said single storage system. 14e A system according to claim 13, wherein said pre programmed computer means is further programmed for:
a) automatically determining and displaying random locations for storage of said physical items in said rack means;
b) electronically accepting orders from buyers for said physical items maintained within said single storage system;
c) generating picking lists which direct pickers to the locations of said physical items in said rack means and which correspond to said orders; and
d) storing and retrieving shipping procedures and locations for shipment of said orders when completed.

15* A system according to claim 13, further comprising second rack means for storing open containers of said physical items.

16a A system according to claim 13, further comprising:

a) scale means for determining the quantity of said physical items when filling said orders; and
b) conveyor means for transporting said physical items to said scale means.

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17* A method of selecting a vendor for each of a plurality of physical items comprising the steps of:

a) providing a computer with data storage and retrieval equipment at a first station;
b) providing a buyer input/output (I/O) device with a video display screen at each of a plurality of buyer stations each of which is remote from said first station and at least one other of said buyer stations;
c) providing means for electrically transmitting and receiving signals between each of said I/O devices and said computer;
d) storing in said computer standard codes, each of which identifies a specific physical item stored in a single warehouse system, together with codes identifying each vendor owning each such item and the prices charged by each vendor for each item;
e) transmitting to said buyer input/output device the identification of each vendor of a selected item, and the price charged for that

item by the vendor, in response to an inquiry received from said buyer input/output device;
f) selecting one of said vendors from which to purchase said item to be supplied from the single warehouse system; and
g) transmitting said selection of said vendor to said computer.

18a A method according to claim 17, comprising the additional steps of:

a) accumulating a plurality of said item codes in temporary storage of said buyer I/O device while said buyer I/O device is not on-line to said computer;
b) transmitting said item codes to said computer in a batch;
c) transmitting the corresponding identities of vendors to said buyer I/O device in batch;

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d) studying said vendor identities while said buyer I/O device is not on-line to said computer.

19a A method according to claim 17, comprising the additional steps of:

a) storing inventory information in said computer regarding each item maintained in said single warehouse system; and
b) displaying on said screen of said buyer I/O device said inventory information with said vendor identities.

20e A method of storing and retrieving physical items maintained in a single warehouse system, wherein said physical items are owned by a plurality of vendors, comprising the steps of:

a) providing a computer with data storage and retrieval equipment;
b) storing in said computer the identities of vendors and the items warehoused by said vendors in the single warehouse system;
c) storing full containers of said physical items in a first storage location remote from a shipping station;
d) storing open containers of said physical items in a second storage location near said shipping station;
e) storing in said computer the quantities of said physical items in said full and open containers;
f) identifying each container entering the single warehouse system with a bar code*
g) storing in said computer each identifying bar code and information about each container including: quantity, item type and vendor;
h) storing in said computer the locations available for storage in all storage

locations;

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i) using said computer to randomly assign containers to available locations and storing said container locations in said computer;

j) storing in said computer all orders for items stored in said single warehouse system;

k) filling an order by picking selected physical items from said storage locations, such that at least one container of a particular physical item is picked from said first storage location if the quantity ordered of said particular item is greater than or equal to the quantity of said particular item in a single container, if the quantity needed to fill said order of said particular item cannot be filled exactly by one or more full containers from said first storage location then the quantity of said particular product available at said second storage location is checked to determine if it is sufficient to complete the order, if the quantity of said particular product available at said second storage location is insufficient to complete the order, then the full quantity of said particular product at said second storage location is used in combination with a sufficient quantity of said particular product from a container which is taken from said first storage location to said second storage location where it is opened.

21e A method according to claim 20, including the additional step of using said computer to generate a pick list based on said orders stored in said computer identifying the location of the items comprising said orders and further identifying the quantity of said items necessary to fill each order.

22o A method according to claim 20, including the additional step of storing more than one full container of the same particular product from a single control batch in a random location in a third storage area.

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23e A method according to claim 22, including the additional step of storing full pallets of containers in a fourth storage location.

24* A method according to claim 20, including the additional step of preparing each order at a make-up station having a plurality of different sized bins.

25a A method according to claim 24, including the additional steps of:

a) using said computer to calculate the weight and volume of each order to be filled; and

b) using said computer to assign each order to an appropriate sized bin in said make@up

station based upon the weight and volume of said order.

26* A method according to claim 20, including the additional steps of:

- a) providing a central computer with data storage and retrieval equipment, wherein said central computer communicates with said computer,, and wherein said orders are initially stored in said central computer;
- b) downloading said orders from said central computer to said computer during off@hours.

27 A comprehensive electronic ordering and warehouse system comprising the steps of:

- a) providing a computer with data storage and retrieval equipment at a first station;
- b) providing a buyer input/output ("I/O") device with a video display screen at each of a plurality of buyer stations each of which is remote from said first station and at least one other of said buyer stations;
- c) providing means for electrically transmitting and receiving signals

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between each of said I/O devices and said computer;

- d) storing in said computer the identities of vendors and the items warehoused by said vendors, wherein said items are warehoused in a single warehouse system;
- e) displaying on said screen of one of said buyer I/O devices a list of vendors who store a pre-determined item in said warehouse system;
- f) placing an order for said item from a selected one of the vendors listed by transmitting a signal to said computer;
- g) storing full containers of said physical items in a first storage location remote from a shipping station in said single warehouse system;
- h) storing open containers of said physical items in a second storage location near said shipping station;
- i) storing in said computer the quantities of said physical items in said full and open containers;
- j) identifying each container entering said single warehouse system with a bar code;

k) storing in said computer each identifying bar code and information about each container including: quantity, item type and vendor;

l) storing in said computer the locations available for storage in all storage locations;

m) using said computer to randomly assign containers to available locations and storing said container locations in said computer;

n) storing in said computer all said orders for items stored in said single warehouse system;

o) filling an order by picking selected physical items from said storage locations, such that at least one container of a particular

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physical item is picked from said first storage location if the quantity ordered of said particular item is greater than or equal to the quantity of said particular item in a single container, if the quantity needed to fill said order of said particular item cannot be filled exactly by one or more full containers from said first storage location then the quantity of said particular product available at said second storage location is checked to determine if it is sufficient to complete the order, if the quantity of said particular product available at said second storage location is insufficient to complete the order, then the full quantity of said particular product at said second storage location is used in combination with a sufficient quantity of said particular product from a container which is taken from said first storage location to said second storage location where it is opened.

28* A method according to claim 27, comprising the additional steps of:

a) calculating the monetary value of said order;

b) comparing the monetary value of said order against a pre-determined credit limit of said buyer; and

c) rejecting said order if said monetary value of said order exceeds the predetermined credit limit of said buyer.

29* A method according to claim 27, comprising the additional steps of:

a) electronically transmitting a signal from said computer to a bank to debit an account of said buyer in the amount of the monetary value of said order; and

b) electronically transmitting a signal from said computer to said bank to credit an account of said selected

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vendor in the amount of the monetary value of said order.

30e A method according to claim 27, comprising the additional steps of:

- a) preparing an inquiry off-line from said computer by locally designating said pre-determined item; and
- b) electronically transmitting said inquiry to said computer in batch.

31* A method according to claim 27, comprising the additional steps of:

- a) storing in said computer shipping information about said order; and
- b) displaying on said screen of said one of said buyer I/O devices shipping information about said order.

32 A method according to claim 27, comprising the additional step of selecting one of said listed vendors offline from said computer prior to placing an order.

33m A method according to claim 27, comprising the additional steps of:

- a) storing in said computer the base price and quantity discount information for each item of each vendor stored in said warehouse system;
- b) electrically transmitting a desired quantity of said pre-determined item to said computer;
- c) calculating the price of said pre determined item from each vendor based on said transmitted quantity and said base price and discount information; and
- d) displaying on said screen of one of said buyer I/O devices the base price, maximum quantity discount,, and actual price based on said transmitted quantity for a pre-determined item for each of said vendors who stores said pre

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determined item in said warehouse systeme

34 A method according to claim 27, comprising the additional step of providing a designation for each type of physical item stored in said warehouse system.

35* A method according to claim 27, comprising the additional steps of:

- a) providing each said buyer with an authorization code;
- b) storing said authorization codes in said computer;
- c) transmitting an authorization code to said computer from said I/O device of said buyer prior to transmitting said

inquiry to said computer; and
d) preventing communication between said computer and said I/O device if said transmitted authorization code does not match one of said authorization codes stored in said computer.

36e A method according to claim 27, comprising the additional steps of:

a) detecting each instance a particular vendor's name is displayed to a buyer as part of said list of vendors who store a pre-determined item in said warehouse system; and
b) storing in said computer the number of times a particular vendor's name is displayed to a buyer as part of said list of vendors.

37o A method according to claim 36, comprising the additional steps of:

a) providing a vendor I/O device with a video display screen at at least one vendor station which is remote from said first station;
b) providing means for electrically sending and receiving signals between each of
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said vendor I/O devices and said computer;

C) sending a signal to said computer from one of said vendor I/O devices requesting the number of times said vendor's name was displayed to a buyer as part of said list of vendors who store a pre-determined item in said warehouse system;
d) sending a signal to said vendor I/O device indicating the number of times said vendor's name was displayed to a buyer as part of said list of vendors, wherein said indication is retrieved from storage in said computer;
e) displaying on said screen of one of said vendor I/O devices the number of times said vendor's name was displayed to a buyer.

38 A method according to claim 27, including the additional step of using said computer to generate a pick list based on said orders stored in said computer, wherein said pick list includes: the location of the items comprising said orders and the quantity of said items necessary to fill each order.

39o A method according to claim 27, including the additional step of storing full pallets of containers in a

fourth storage location.

40a A method according to claim 27, including the additional step of preparing each order at a make-up station having a plurality of different sized bins.

41* A method according to claim 40, including the additional steps of:

a) using sa

id computer to calculate the

weight and volume of each order to be filled; and

b) using said computer to assign each order to an appropriate sized bin in said

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make-up station based upon the weight and volume of said order.

42* A method according to claim 27, including the additional steps of:

a) providing a second computer with data storage and retrieval equipment in a warehouse of said warehouse system, wherein said second computer communicates with said computer at said first station;

b) storing in said second computer the identities of vendors and the items warehoused by said vendors in the single warehouse system, the quantities of is physical items in said full and open containers, the identifying bar code information about each container, and the locations available for storage in all storage locations;

c) uploading the information stored in said second computer to said computer at said first station; and

d) downloading said orders stored in said computer at said first station to said computer during off-hours.

43e A product storage and distribution method, said method comprising the steps of:

a) storing in a single public warehousing system the goods of a plurality of different vendors;

b) using a computer to maintain information as to the identity, prices, and actual level of inventory of each vendor's items stored in said warehousing system;

c) upon demand, delivering said information to one of a plurality of remote terminals; and

d) upon receipt of an order from said one terminal, delivering to a pre-determined

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destination, specified items of a

specified vendor.

44* A computerized public warehousing and distribution network, said network comprising, in combination:

- a) a pre-programmed central computer associated with public warehousing facilities;
- b) said computer being adapted to maintain information regarding goods of a plurality of vendors whose goods are stored in said facilities;
- c) said information including: where in said facilities specific goods of said vendor are stored; current prices asked by said vendor for said goods, and the actual inventory of said goods stored in said facilities;
- d) means for transmitting said information to a selected one of a plurality of remote terminals; and
- e) means for transmitting to said central computer, signals for relating to said goods.

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? show files;ds
File 625:American Banker Publications 1981-2006/May 12
(c) 2006 American Banker
File 268:Banking Info Source 1981-2006/May w1
(c) 2006 Proquest Info&Learning
File 626:Bond Buyer Full Text 1981-2006/May 12
(c) 2006 Bond Buyer
File 267:Finance & Banking Newsletters 2006/May 08
(c) 2006 Dialog
File 139:EconLit 1969-2006/May
(c) 2006 American Economic Association

Set	Items	Description
S1	6	(DISPLAY? OR VIEW? OR SHOW?)(3N)(PRICE? ?(2N)(CHOICE? ? OR SELECTION? ?))
S2	832	(PRODUCT? ? OR ITEM? ? OR GOOD? ? OR MERCHANDISE)(6N)(INVENTORY OR STOCK OR AVAILABLE OR AVAILABILITY OR SUPPLY OR SOLD OR VOLUME)(6N)(LEVEL OR TOTAL OR AMOUNT)
S3	868	(USER? OR BUYER? OR PURCHASER?)(6N)(SCREEN OR TERMINAL OR - MONITOR OR WINDOW OR DISPLAY)
S4	0	S1 AND S2 AND S3
S5	4	S2 AND S3
S6	10	S1 OR S5
S7	0	S2(30N)S3
S8	0	S4 OR S7
S9	10	S1 OR S5:S6
S10	9	RD (unique items)

? t10/3,k/all

10/3,K/1 (Item 1 from file: 268)
DIALOG(R)File 268:Banking Info Source
(c) 2006 Proquest Info&Learning. All rts. reserv.

00494822 959303451 (USE FORMAT 7 OR 9 FOR FULLTEXT)
SECURITIES/SECTION 20/BROKER-DEALER
Anonymous
Banking & Financial Services Policy Report, v24, n12, p16-19, Dec 2005
DOCUMENT TYPE: Periodical; General Information LANGUAGE: English
RECORD TYPE: Fulltext
WORD COUNT: 1,641

(USE FORMAT 7 OR 9 FOR FULLTEXT)
... outside accounts.
Many identity thieves use malicious software programs to attack vulnerable computers of online users. These software programs can monitor computer activity and send information back to the thief's computer. Sometimes, these programs will...

...law solely by reason of having caused an account to pay more than the lowest available commission if that person determines in good faith that the amount of the commission is reasonable in relation to the value of the brokerage and research...

10/3,K/2 (Item 2 from file: 268)
DIALOG(R)File 268:Banking Info Source
(c) 2006 Proquest Info&Learning. All rts. reserv.

00439957 214407191 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Website of the Year
Anonymous
Mortgage Technology, p38, Nov/Dec 2002 DOCUMENT TYPE: Periodical; News
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 905

(USE FORMAT 7 OR 9 FOR FULLTEXT)
... to the Gemstone site directly from the 1003 embedded in their LOS. That takes the user straight to the registration screen - where most of the information is pre-populated automatically - to register in a matter of ...

...is replacing broadcast-faxed rate sheets with online rate sheets

customized to the loan officer level . Full product , pricing, and site support is available through OHIO's Mortgage Contact Center.
The philosophy behind the development of the Gemstone site...

10/3,K/3 (Item 3 from file: 268)
DIALOG(R)File 268:Banking Info Source
(c) 2006 Proquest Info&Learning. All rts. reserv.

00410385 95668815 (USE FORMAT 7 OR 9 FOR FULLTEXT)
ASP contract essentials
Scheuerman, Mike
Credit Union Magazine, v67, n12, p45-46, Dec 2001 DOCUMENT TYPE:
Periodical; Commentary LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 1,087

(USE FORMAT 7 OR 9 FOR FULLTEXT)
... metrics you should address in your contract: uptime and response time.
* Uptime refers to the amount of time a system is available for use. It's calculated as a percentage of the total available time. If you have 99% uptime for the month, the system was available for use 712.8 hours out of the total 720 hours in a 30-day period (Table I).
To get a good feel for what uptime levels are appropriate for your credit union, take a look at...

...For a system that's doing a simple calculation and is directly connected to the user terminal , you would expect a response in less than two seconds. For a system that's...

10/3,K/4 (Item 4 from file: 268)
DIALOG(R)File 268:Banking Info Source
(c) 2006 Proquest Info&Learning. All rts. reserv.

00265918 (USE FORMAT 7 OR 9 FOR FULLTEXT)
Technology and innovation in retail banking distribution
Devlin, James F
International Journal of Bank Marketing, v13, n4, p19-25, 1995
DOCUMENT TYPE: Journal Article LANGUAGE: English RECORD TYPE: Abstract
Fulltext
WORD COUNT: 05933

(USE FORMAT 7 OR 9 FOR FULLTEXT)
... of costs by taking advantage of the resultant economies of scale. However, a useful by-product has been that less of the total space available in branches needs to be given to staff and can therefore be converted into "customer...instance a bank computer, store information and then process, update and transmit it. The small screen can be made touch sensitive, enhancing user friendliness and providing a large option of menus. This obviously provides opportunities for marketing purposes...

10/3,K/5 (Item 1 from file: 139)
DIALOG(R)File 139:EconLit
(c) 2006 American Economic Association. All rts. reserv.

787977
TITLE: Strategy-Proof Risk Sharing
AUTHOR(S): Ju, Biung-Ghi
AUTHOR(S) AFFILIATION: Department of Economics, The University of Kansas
PUBLICATION INFORMATION: University of Kansas, Department of Economics,
WORKING PAPERS SERIES IN THEORETICAL AND APPLIED ECONOMICS: 200305
PAGES: 37 pages
PUBLICATION DATE: 2003
AVAILABILITY: <http://www.ku.edu/~bgju/2003Papers/200305Ju.pdf>
DOCUMENT TYPE: Working Paper
ABSTRACT INDICATOR: Abstract

...ABSTRACT: no one can ever be benefited by misrepresenting his preference. when aggregate certainty holds, we show that "fixed price selections " from the walrasian correspondence are the only

rules satisfying efficiency, individual rationality, and
strategy-proofness...

10/3,K/6 (Item 2 from file: 139)

DIALOG(R)File 139:EconLit

(c) 2006 American Economic Association. All rts. reserv.

663184

TITLE: Pricing, Quality-Setting, and Order of Plays in an Online
Information Market

AUTHOR(S): Lee, Sang-Ho

AUTHOR(S) AFFILIATION: Chonnam National U

JOURNAL NAME: International Journal of Business and Economics,

JOURNAL VOLUME & ISSUE: 13,

PAGES: 179-91

PUBLICATION DATE: 2002

AVAILABILITY: <http://www.ijbe.org> Publisher's URL

ISSN: 1607-0704

DOCUMENT TYPE: Journal Article

ABSTRACT INDICATOR: Abstract

...ABSTRACT: information products. We examine the order of plays in games
of vertical product differentiation and show that sequential price
choice of network providers reduces content differentiation among
online information products, so that intense price competition...

10/3,K/7 (Item 3 from file: 139)

DIALOG(R)File 139:EconLit

(c) 2006 American Economic Association. All rts. reserv.

597505

TITLE: Optimum Crop Insurance under Joint Yield and Price Risk

AUTHOR(S): Mahul, Olivier

AUTHOR(S) AFFILIATION: INRA

JOURNAL NAME: Journal of Risk and Insurance,

JOURNAL VOLUME & ISSUE: 67 1,

PAGES: 109-22

PUBLICATION DATE: 2000

AVAILABILITY: <http://journalofriskandinsurance.org>

ISSN: 0022-4367

DOCUMENT TYPE: Journal Article

ABSTRACT INDICATOR: Abstract

...ABSTRACT: reduce his or her optimal price selection. The effect of
direct subsidies on the optimal price selection is shown to
depend on the producer's temperate behavior.

10/3,K/8 (Item 4 from file: 139)

DIALOG(R)File 139:EconLit

(c) 2006 American Economic Association. All rts. reserv.

224106

TITLE: Alternative Measures of Real GNP

AUTHOR(S): Young, Allan H.

JOURNAL NAME: Survey of Current Business,

JOURNAL VOLUME & ISSUE: 69 4,

PAGES: 27-34

PUBLICATION DATE: April 1989

ISSN: 0039-6222

DOCUMENT TYPE: Journal Article

ABSTRACT INDICATOR: Abstract

...ABSTRACT: for 1982-88. The Bureau of Economic Analysis is developing
alternative measures because experience has shown that the choice
of price weights for food, energy, and computers affects the
measurement of the change in real GNP...

10/3,K/9 (Item 5 from file: 139)

Ginger R. DeMille

DIALOG(R)File 139:EconLit
(c) 2006 American Economic Association. All rts. reserv.

199156

TITLE: Competition, Tacit Collusion and Free Entry
AUTHOR(S): MacLeod, W. B.; Norman, G.; Thisse, J.-F.
JOURNAL NAME: Economic Journal,
JOURNAL VOLUME & ISSUE: 97 385,
PAGES: 189-98
PUBLICATION DATE: March 1987
ISSN: 0013-0133
DOCUMENT TYPE: Journal Article
ABSTRACT INDICATOR: Abstract

...ABSTRACT: free-entry equilibrium using Bertrand-Nash assumptions, while the second stage deals with the collusive selection of price. This solution is shown to be a subgame perfect Nash equilibrium. At equilibrium, firms make long-run excess profits...

?

01289113/9 Links

EUROPEAN PATENTS

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01289113

Retail data distribution system

System zum Versenden von Retail-Verkaufsdaten

Systeme de distribution de donnees de vente au details

PATENT ASSIGNEE:

Retail Experience Limited, (4053670), Faith House, 40-48 Chase Road, Park Royal, London NW10 6PX, (GB), (Applicant designated States: all)

INVENTOR:

Faith, Jonathan David, 44 Manor Hall Avenue, Hendon, London NW4 1NR, (GB)
Winetroube, Howard Stephen, The Acorns, 12 Seeleys Road, Beaconsfield, Buckinghamshire HP9 1BY, (GB)

LEGAL REPRESENTATIVE:

Slingsby, Philip Roy (76923), Page White & Farrer 54 Doughty Street, London WC1N 2LS, (GB)

PATENT (CC, No, Kind, Date): EP 1107155 A2 010613 (Basic)
EP 1107155 A3 021016

APPLICATION (CC, No, Date): EP 2000310102 001114;

PRIORITY (CC, No, Date): GB 9928702 991203

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS (V7): G06F-017/60

ABSTRACT EP 1107155 A2

Salesman advisory apparatus for distributing retail data, comprising: data storage means arranged to hold product records for a plurality of product types; at least one portable wireless terminal comprising a first processing unit, a display, a user input device and a data capture device for input of information indicative of a product type; and server means capable of bi-directional wireless communication with the terminal and including a second processing unit; the terminal being arranged to capture by means of the data capture device information indicative of a first product type and to transmit that information to the server means in the form of a data request message; and the server means being arranged to, in response to the data request message, retrieve from the data storage means at least part of the product record for the first product type and transmit the said at least part of the product record to the terminal for display to a user.

ABSTRACT WORD COUNT: 159

NOTE:

Figure number on first page: 1

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 010613 A2 Published application without search report

Assignee: 020508 A2 Transfer of rights to new applicant: Retail Experience Limited (4053670) Faith House, 40-48 Chase Road, Park Royal London NW10 6PX GB

Search Report: 021016 A3 Separate publication of the search report

Examination: 030618 A2 Date of request for examination: 20030416

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200124	999
SPEC A	(English)	200124	5214
Total word count - document A			6213
Total word count - document B			0
Total word count - documents A + B			6213

SPECIFICATION EP 1107155 A2

This invention relates to a system for distributing retail data, for example to salesman handsets or other units.

Numerous shops display un-packaged samples of products in a showroom and store elsewhere packaged goods for purchase by customers. Typical examples of such shops include retailers of electrical goods and footwear. In those shops salesmen are employed to provide shoppers with information on the products, help customers to make a selection and obtain the goods from the store for supply to the customer.

In order to satisfy customers, such shops must be capable of providing accurate and up-to-date information on the products and their availability (e.g. whether they are in stock, or the delivery arrangements).

There is often little room in the shop for full details of each product to be displayed. Therefore, summaries of the products' features are often shown on small tickets near the products. However, these tickets may not give a shopper all the information he needs. Also, such tickets do not allow for accurate comparison between products because similar features may not have been selected for display on each ticket. Fixed installations can be provided, which include a computer having a store of product data, a display and an input device such as a touch screen. A shopper can then use such a terminal to retrieve information on a product. However, if the product is on display elsewhere in the shop the shopper can not view the product and learn its details at the same time. This is inconvenient. Salesmen can be trained to know the details of each product. However, in many shops there is a high turnover of staff and it is therefore expensive to fully train each salesman. Also, it is very difficult for even a fully trained salesman to remember all the details of every product in the shop - especially when complex items such as electronic equipment are being sold.

It is thus difficult for a shopper to find a product that meets his requirements, to make comparisons between products or to select a product.

If a shopper requests a product the salesman must go to the stock room where the goods are stored and check whether it is available. If it is not in stock then he must return and invite the shopper to choose another product. In some shops the stock room is some distance from the showroom. There is therefore a significant delay in checking on availability, which can irritate the shopper. If the shopper must choose another product the salesman will have difficulty in advising on a suitable alternative if he does not know the features of the other products well.

Many shops use promotional offers to increase sales. Signs indicating the products to which the offers apply can be placed in the shop near those products, but the signs are often obscured or misplaced. As a result, shoppers may not be informed of offers that apply to products they are buying. Such shoppers may be dissatisfied with the shop if they later learn that they were not informed of the special offer.

Some products have matching counterparts that shoppers might wish to purchase together, for example, a pair of shoes may match a handbag in the same style, or a toaster may match a kettle in the same style. These products present a problem to shopkeepers. In order to best inform a shopper of the fact that a matching product is available, and therefore increase the chance of selling both products together, both products should be displayed side-by-side. However, sales of the individual products items are more likely if they are displayed together with products of a similar purpose - for example if the handbag is displayed together with other handbags. Displaying such handbags in both locations wastes shop space.

There is therefore a need for a means whereby shoppers and/or sales staff may be better provided with more accurate and up-to-date information on available products, and to allow even relatively unskilled salesmen to provide shoppers with useful assistance.

According to one aspect of the present invention there is provided salesman advisory apparatus for distributing retail data, comprising: data storage means arranged to hold product records for a plurality of product types; at least one portable wireless terminal comprising a first processing unit, a display, a user input device and a data capture device for input of information indicative of a product type; and server means capable of bi-directional wireless communication with the terminal and including a second processing unit; the terminal being arranged to capture by means of the data capture device information indicative of a first product type and to transmit that information to the server means in the form of a data request message; and the server means being arranged to, in response to the data request message, retrieve from the data storage means at least part of the product record for the first product type and transmit the said part of the product record to the terminal for display to a user.

According to another aspect of the present invention there is provided a method for distributing retail data in a system comprising data storage means arranged to hold product records for a plurality of product types; at least one portable wireless terminal comprising a first processing unit, a display, a user input device and a data capture device for keyless data capture of information indicative of a product type; and server means capable of bi-directional wireless communication with the terminal and including a second processing unit; the method comprising the steps of: capturing at the terminal by means of the data capture device information indicative of a first product type; transmitting that information to the server means in the form of a data request message; in response to the data request message, retrieving by means of the server means from the data storage means at least part of the product record for the first product type; and transmitting the said at least part of the product record to the terminal for display to a user.

Preferably the terminal is arranged to capture by means of the data capture device information indicative of a second product type and to transmit that information to the server means in the form of a data comparison request message; and the server means is arranged to, in response to the data comparison message, retrieve from the data storage means at least part of the product record for the second product type; compare the said part of the product record for the first product type and the said part of the product record for the second type, generate comparison data dependant on that comparison, and transmit the comparison

data to the terminal for display to a user. Alternatively the comparison may be performed by the terminal after having received the said parts of product records for both products. The data comparison message may include information indicative of the first product type.

The said parts of product records suitably include data defining features of products of the respective types. The said features may include technical features, price information, discount information, special offer information and/or other information.

The terminal may be arranged to receive product feature information and to transmit that information to the server means in the form of a feature request message; and the server means is arranged to, in response to the feature request message analyse the product records to determine the products best matching the product feature information, and transmit a list of those product types to the terminal for display to a user. Each product record may include a stock level value for the respective product type indicating an available stock level for each product type, and the server means is arranged to exclude from the said list all products for which the indicated available stock level is not greater than zero.

The terminal is suitably arranged to receive user input indicative of a sale being agreed for a product type, and to initiate a sale procedure by transmitting a sale message to the server indicating that product type. Each product record may include stock location data. The server may be arranged to, in response to receiving a sale message indicating a product type, retrieve from the data storage means the stock location data for the product type and transmit the stock location in a stock location message to a second terminal for display. Each terminal may be capable of operation in a sales mode for at least transmission of data request messages and a stock mode for at least receipt and display of stock location messages. Alternatively, a terminal may be capable of operation only in one of those modes, or in both modes simultaneously.

The data capture device is suitably a keyless data capture device, preferably an optical data capture device. The device may be a bar code reader.

Preferably each terminal has a terminal identifier. The data storage means may then be arranged to hold user records for a plurality of users; and to hold, when a terminal is in use by a user, a record of a user identifier of that user associated with the terminal identifier of that terminal. The system suitably includes at least one point of sale terminal and the server is arranged to, when a point of sale terminal indicates that a sale has been made corresponding to a previously transmitted sale message, update the user record for the user of the terminal that transmitted the sale message in accordance with the sale. The point of sale terminal may be a till, credit card reading terminal or the like.

The said part of the product record for the first product type suitably includes sales price information indicative of the price at which the user of the terminal may offer the first product type. The server may also be capable of modifying that price in dependence on the stored identity of the user and/or any user records for that user. The sales price information suitably includes information indicative of the discount that may be offered by the user of the terminal.

The present invention will now be described by way of example with reference to the accompanying drawings, in which:

figure 1 shows a schematic view of a system of processing retail data;

and

figure 2 shows schematically the structure of a portable terminal.

Figure 1 shows a system for processing retail data, with the principal aim of providing advisory information to salesmen. The system comprises a server unit 1. The server unit could be a conventional personal computer loaded with appropriate software for performing the functions described below. The server unit is connected to a data storage unit 2 to which it can store and from which it can retrieve stored information. The data storage unit is loaded with information on products for sale, as described below. The server unit is also connected to a wireless base station unit 3. The wireless base station unit 3 can communicate by radio with a plurality of portable wireless sales terminals 4, 5 etc. The communication unit provides an interface by which the server unit can transmit information to and receive information from any of the terminal units. The server unit is also connected to a plurality of point of sale terminals such as cash tills or the like.

Figure 2 shows one of the portable wireless terminals in more detail. The terminal of figure 2 comprises a processor 6 which is connected to a non-volatile memory 7, a wireless terminal unit 8, a display 9, a keypad

10, and a bar code reader 11. Non-volatile memory 7 stores software for execution by the processor 6. Processor 6 includes temporary memory for use in executing such software. The wireless interface unit 8 is capable of communicating by radio with the base station unit 3. The processor 6 can thus communicate with the server unit by way of a radio link between terminal unit 8 and base station unit 3. Processor 6 can control the display 9 to display at least text information, and can receive input from keypad 10. The bar code reader 11 includes an optical sensor 12 and a bar code processing unit 13 for analysing input from the sensor as it is drawn by a user across a bar code and decoding it to determine the value encoded by the bar code. When the bar code reader is activated and detects a bar code it provides the value of that code to the processor 6. The portable terminal also includes a rechargeable battery as power source, which can be recharged when the terminal is stored in a recharger stand 14.

The base-station unit 3 and the wireless terminal units 8 of the portable terminals are arranged so that bi-directional radio communication can be carried out between the base-station unit and any of the terminals. Each terminal unit 8 may have a dedicated radio channel, or other means may be used so that each terminal ignores communications intended for another terminal. Communication between each terminal and the base station is in the form of discrete digital messages. Each message specifies the identity of the transmitting unit and the identity of the unit intended to receive the message. The base-station unit 3 and the wireless terminal units 8 may be based on the Piccolink system available from Nordic ID of Salo, Finland. The terminals are preferably of a sufficiently small size to be conveniently held and carried by hand.

Figure 1 shows the salesroom information system installed in a retail shop including a showroom 20 and a store room 21. Samples of product items that are available for sale are displayed in the showroom for shoppers to view. Close to each item (for example attached to the item or set into the front face of the shelf on which the item stands) is a ticket identifying the respective item. The ticket includes a bar code

encoding the item's product code, and optionally a brief description of the item. Packaged goods for sale to customers are stored in store room 21 to which shoppers do not have access. When a shopper decides to make a purchase the required product is identified in the store room, from data supplied by the terminal, by the staff there and is brought to the point of sales terminals where the shopper can pay for it and collect it. This format of shop is typical of, for example, electrical goods retailers and shoe shops. The present invention is not limited to this format of shop and may be implemented in shops of other formats. In the example of figure 1, some of the terminals (shown at 4) are issued to staff in the showroom or shop floor who can carry the terminals with them as they consult with shoppers. Some of the terminals (shown at 5) are issued to staff in the store room 21.

Each of the products in the shop has a product code that is encoded as a bar code on its ticket. For each product code the data storage unit 2 can hold information in several categories, for example:

- * price of the product
- * features of the product;
- * whether matching or complementary products are available;
- * optional features of the product, for example different available colours;
- * availability of the product in the store room 21 and/or delivery dates and arrangements for the product if it is not available from stock;
- * location of the product in the stock room;
- * special offers involving the product, for example promotions in which a shopper receives a gift with the product, or linked purchase offers in which a matching product is offered at a discount if bought together with the product itself;
- * price history of the product, indicating whether the product is being offered for sale at a reduced price;
- * an indication of the level of discount that a salesman may allow on the product. This data forms a product database.

Each salesman has an identification number. The data storage unit 2 can also hold records of the performance of each salesman, for example:

- * the total number and/or total value of products sold by the salesman over a set time period such as a day, week or month;
- * the amount of discount given by the salesman;
- * the number of enquiries handled by the salesman;
- * the salesman's sales targets. This data forms a salesman database.

Further information can also be stored in the data storage unit 2, as indicated below.

In use the salesroom information system of figure 1 is capable of providing salesmen with information on products so as to assist them in making sales, transferring information on

sales around the shop so as to

facilitate the process of making a sale, and gathering information on sales and enquiries for management use.

Each salesman carries a terminal 4 with him on the shop floor. The salesman may be issued with a personal terminal. Alternatively, a pool of terminals may be provided, and before using one of those terminals a salesman may enter his identification number into the terminal to identify himself to the system. The server 1 stores an indication of which salesman is currently associated with which terminal.

When a salesman is assisting a customer, his terminal 4 can provide him with information on products in a number of forms.

In a first mode, a salesman indicates by means of the keypad 10 of his terminal that he requires information on features of a product. The terminal may be in this mode by default. The processor 6 prepares to receive input from the bar code reader 11. The salesman swipes the sensor 12 over the barcode of the product's ticket, and the processor receives the value of the product's product code, which is encoded by the bar code. The processor 6 then causes a product information request message to be transmitted by wireless interface unit 8 to base station unit 3 and thence to server unit 1. The product information request message specifies the product code and indicates that information on that product is requested. The server unit 1 retrieves the information for that product from the storage unit 2 and causes a product information response message to be transmitted by base station unit 3 to interface unit 8 and thence to processor 8. Processor 8 then stores that information and can display any or all of it to the salesman using display 9. By this means, when a shopper asks the salesman for information on a product the salesman can swipe the barcode of the product, read the displayed information (using the keypad 10 to indicate to the processor which information is to be displayed) and provide the customer with the required information. That information may be some or all of the product information stored for the product. Initially only some of the information may be provided to the terminal, other information being provided on request. Alternatively all the available information may be provided initially. The choice between these modes depends on the speed of the server and the available wireless bandwidth and the available processing and memory capacity of the terminals in a specific application.

On receiving the appropriate information the salesman can tell the customer the features of the product, the available colours of the product, whether there are any special offers relating to the product, the price of the product etc. The salesman may also receive the information indicating the amount of discount available, in which case he is immediately able to answer any requests from the shopper for discount.

This facility provides great advantages over conventional sales procedures. Firstly, it makes it easier and more economical for a shop to provide customers with accurate information on products. Even relatively unskilled staff can operate the terminal to obtain the desired information from the server. There is no need for large product information sheets to be displayed, which occupy room on the shop floor and are costly to keep up to date. Secondly, the facility allows the salesman to provide a shopper with real-time information on the availability of the product in question in the store room or, if the product is not in stock, on the availability of deliveries of the product. Any special offers available on the product may be highlighted to the salesman so that he can bring them to the attention of the customer. This is especially important since the customer may be dissatisfied if he later finds that he has not been informed of a special offer that was available. Also, it allows the problem of displaying matching or complementary items to be addressed: when a customer enquires about a product the salesman is immediately able to inform him that a matching product is available, even if it not displayed at the same

location in the shop.

If the shopper enquires about another product the salesman may then swipe the barcode of that product to retrieve its product information. That information may also be stored in the terminal 4.

By means of the keypad the salesman may indicate that a comparison is to be made of the features of the products whose information is stored. The processor 6 then compares the features and displays the differences to the salesman. This is valuable in assisting a shopper to decide between two products. The comparison of the products may be made at the server in response to a comparison request message from the terminal specifying the products. An appropriate comparison response message indicating the differences may then be sent from the server. This would reduce the amount of processing and memory capacity needed in the terminals.

In a second mode the salesman may enter into the terminal a list of product features sought by a shopper. The factors could be limited by, for example, price, brand or technical requirements of the shopper. That list is transmitted to the server which scans the product database to determine which products best match the shopper's specification. The server returns a message indicating the best matching products, which is displayed to the salesman as a list. The list may be sorted by the price of the products. The salesman may then request full product information for any of those products. In scanning for best matching products the server preferably ignores items that are out of stock, so that the customer will not be disappointed if he selects a product from the list that is unavailable.

The terminal is capable of displaying the features of a product, for example by retrieving a list of product featured from the store 2. The store may also be able to provide explanations of those features to assist inexperienced salesmen to explain details of the product to a shopper.

A salesman may request the server to provide an indication of alternatives to a product that has been selected. This allows the salesman to attempt to satisfy a customer who requests an item that is out of stock. The server may select possible alternatives by determining the products that are in stock that best match the unavailable item.

A printer 16 is connected to the server and located on the shop floor. A salesman can transmit to the server a print request message specifying one or more products. In response the server prints details of those products using printer 16, which the salesman can give to a shopper to help him decide on a purchase.

The terminal may be capable of providing information relating to alternative products to one in which a shopper is interested. For example, to assist a salesman in selling up the terminal may be able to recall from the store 2 details of the additional features that are provided by the next more expensive product above that in which a shopper is interested.

When the shopper has selected a product the salesman indicates by means of the keypad that a sale is to be made and then makes an input by means of the keypad (e.g. to indicate purchase of an item whose details are displayed on the terminal) or by means of swiping the product's bar code with the sensor 12 of bar code reader 11 to indicate to the processor 6 the product that is to be sold. The processor 6 then causes a sale initiation message (which identifies the product that is to be sold) to

be transmitted to the server 1. In response to that message the server 1 verifies from the product database that the requested product is in stock. Server 1 then transmits a product request message (which identifies the product that is to be sold, and indicates its location in the stock room) to a terminal 5 in the stock room. The user of that terminal goes to the indicated location, picks the product to be sold and takes it to a point of sale terminal in the shop. If necessary, the user of the terminal 5 can then transmits a product ready message (indicating the product) to the server 1 which can return a sale ready to the terminal 4 of the salesman who made the sale so that he can inform the shopper that the product is ready for collection. At the point of sale terminal the shopper pays for and collects the product. The point of sale terminal transmits a sale message to the server, which decrements the stored stock quantity for the product in the product database, and updates the salesman record of the salesman who made the sale with the details of the product that was sold.

If the stock room is large there may be several users of terminals ("pullers") in the stock room. Each puller may indicate to the server that he will work in a specified region of the stock room. The server may then direct each product request message to the puller working in the appropriate area of the stock room.

Each salesman can retrieve his own salesman information from the server to check his current performance against his targets. A manager in his office 22 can also retrieve all the sales information using a personal computer 15 connected to the server. The computer 15 can be used to retrieve from the data storage unit 2 the total branch performance versus target. The computer 15 The computer 15 can also be used to update the product database and the salesman database with new information, for example details of additional products, new special offers or revised salesman targets. The computer 15 may also be used to alter the price of

products, or the discount that may be offered on them, in real time. For example, if the manager determines that there is a need to sell more of a certain product he can reduce the price stored for the product and salesmen will immediately be able to offer the product at the reduced price. The prices may be altered from a remote terminal, e.g. at a head office, that is connected to the system. The system may initiate perpetual inventory stock control.

A printer 17 is connected to the computer 15 to allow data to be printed out and new product tickets including bar codes to be printed for use on the shop floor.

The server 1 can be configured to initiate collection by salesmen of information on customers. In one approach, after a salesman has received an enquiry from a shopper the server transmits to that salesman's terminal a request for information that the salesman can provide without asking the shopper - for example the sex, estimated age of the shopper, whether the shopper knew what he wanted or required advice, whether and why a sale was made or not. In a second approach the server transmits to the salesman's terminal a request for him to ask the shopper for information of that type. Information of this type may be collected continuously, at random times or periodically - for example on every fifth enquiry. Information of this type may be collected at all times of the day or just when the shop is relatively quiet and salesmen have time to answer the requests for information. To answer a request for

information the salesman enters the data using the keypad of his terminal and then causes it to be transmitted to the server. The server may then store the information in a survey database in the storage unit 2, from which it may be retrieved by management computer 15.

Data may also be collected on lost sales. The system may log details of events when a salesman's terminal requests data on a product that is in stock, but no sale is made. These events may be assumed to correspond to instances of customers expressing interest in a product but not making a purchase. This data may provide useful management data on salesmen's performance.

Whenever the identity of a product is to be indicated to the processor 6 it is preferred that the salesman can do so in any available way, for example by swiping the product's bar code, entering the product's code using the keypad or selecting the product using the keypad from a displayed list.

Data is suitably entered into terminals 4,5 in fields displayed on the terminal's display screen. Fields on the terminal are terminated by either reaching the end of the field; or by hitting an <ENTER> key. Transactions are only routed to the back office application run by the server 1 when either the end of the final field on the screen has been reached, or the user presses <ENTER> in the last field on the screen. An escape key is provided on the keypad to enable the operator to return one step. A key is provided to enable the user to void whatever transaction they are in the middle of and return to a main menu screen. Functions are actioned by pressing a hot-key relevant to the event (for instance, a key marked 'A' may invoke Alternatives). Such an 'A' key may also have "B" and "C" marked on it (as a standard telephone keypad); but each key only has one hot-key purpose (to avoid any confusion).

The top line of the display is suitably a hardware based icon line. Then, there are 8 usable lines below this. It is assumed that an 8 line x 20 column display screen will be available on the terminal, and line 1 of the display area will be static. Lines 2 - 8 will allow scrolling of information where applicable. Line 8 will generally be the area where error messages are displayed. If scrolling is applicable to the screen then an arrow indicator will be displayed at the right-hand side of the icon line.

Selection from a menu is suitably by using a arrow keys in the keypad to highlight the appropriate option and then pressing the <ENTER> key; or by using the appropriate hot-key. The cursor on the terminal is indicated by a blinking block (1 character; alternating between inverse and normal video)

Upon switching on a terminal; a salesman or sales assistant logs-on, to ensure that all auditable transactions (such as sales/returns) are associated with the correct assistant. An assistant can only log onto one terminal at once. The entered assistant ID is validated against the salesman database and if invalid an error appears on the terminal display. For a valid log-on; the terminal ID of the terminal logged-onto is be stored against the record for the salesman whose ID has been entered for the course of this "session". The user is then be presented with a main menu. The main menu may provide options such as: Selling, Pull Stock, UnPull Stock, Exchange/Refund, Sales Floor Stock, Goods In/Out, Price/Style Enquiry, Faulty Stock Returns, Inter-Branch Transfer, Log Off. The operator can use the arrow keys to scroll through the

options.

After a period of inactivity of a set duration the terminal preferably logs off, terminating its connection to the base station.

Data may be transmitted from each terminal to the base station by wireless means other than radio, for example optically.

The bar code reader of the terminal may be replaced by another keyless means suitable for detecting product information, for example a scanner capable of optically detecting and machine reading a printed name of the product, or a magnetic sensor capable of reading a magnetic strip on the product or a ticket associated with the product.

The present invention may include any feature or combination of features disclosed herein either implicitly or explicitly or any generalisation thereof irrespective of whether it relates to the presently claimed invention. In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention.

CLAIMS EP 1107155 A2

1. Salesman advisory apparatus for distributing retail data, comprising:
data storage means arranged to hold product records for a plurality of product types;
at least one portable wireless terminal comprising a first processing unit, a display, a user input device and a data capture device for input of information indicative of a product type; and
server means capable of bi-directional wireless communication with the terminal and including a second processing unit; the terminal being arranged to capture by means of the data capture device information indicative of a first product type and to transmit that information to the server means in the form of a data request message; and the server means being arranged to, in response to the data request message, retrieve from the data storage means at least part of the product record for the first product type and transmit the said at least part of the product record to the terminal for display to a user.
2. Salesman advisory apparatus as claimed in claim 1, wherein the data capture device is a keyless data capture device for keyless data capture of information indicative of a product type.
3. Salesman advisory apparatus as claimed in claim 2, wherein the data capture device is a bar code reader.
4. Salesman advisory apparatus as claimed in any preceding claim, wherein the terminal is arranged to capture by means of the data capture device information indicative of a second product type and to transmit that information to the server means in the form of a data comparison request message; and the server means is arranged to, in response to the data comparison message, retrieve from the data storage means at least part of the product record for the second product type; compare the said part of the product record for the first product type and the said part of the product record for the second type, generate comparison data dependant on that comparison, and transmit the comparison data to the terminal for display to a user.
5. Salesman advisory apparatus as claimed in any preceding claim, wherein the said parts of product records include data defining features of products of the respective types.

6. Salesman advisory apparatus as claimed in any preceding claim, wherein the data comparison message includes information indicative of the first product type.
7. Salesman advisory apparatus as claimed in any preceding claim, wherein the terminal is arranged to receive product feature information and to transmit that information to the server means in the form of a feature request message; and the server means is arranged to, in response to the feature request message analyse the product records to determine the products best matching the product feature information, and transmit a list of those product types to the terminal for display to a user.
8. Salesman advisory apparatus as claimed in claim 7, wherein each product record includes a stock level value for the respective product type indicating an available stock level for each product type, and the server means is arranged to exclude from the said list all products for which the indicated available stock level is not greater than zero.
9. Salesman advisory apparatus as claimed in any preceding claim, wherein the terminal is arranged to receive user input indicative of a sale being agreed for a product type, and to initiate a sale procedure by transmitting a sale message to the server indicating that product type.
- 10.

Salesman advisory apparatus as claimed in claim 9, wherein each product record includes stock location data and the server is arranged to, in response to receiving a sale message indicating a product type, retrieve from the data storage means the stock location data for the product type and transmit the stock location in a stock location message to a second terminal for display.

11. Salesman advisory apparatus as claimed in claim 9, wherein each terminal is capable of operation in a sales mode for at least transmission of data request messages and a stock mode for at least receipt and display of stock location messages.
12. Salesman advisory apparatus as claimed in any preceding claim, wherein each terminal has a terminal identifier; the data storage means is arranged to hold user records for a plurality of users; and to hold, when a terminal is in use by a user, a record of a user identifier of that user associated with the terminal identifier of that terminal.
13. Salesman advisory apparatus as claimed in claim 12, as dependant directly or indirectly on claim 11, wherein the system includes at least one point of sale terminal and the server is arranged to, when a point of sale terminal indicates that a sale has been made corresponding to a previously transmitted sale message, update the user record for the user of the terminal that transmitted the sale message in accordance with the sale.
14. Salesman advisory apparatus as claimed in any preceding claim, wherein the said at least part of the product record for the first product type includes sales price information indicative of the price at which the user of the terminal may offer the first product type.
15. Salesman advisory apparatus as claimed in claim 14, wherein the sales price information includes information indicative of the discount that may be offered by the user of the terminal.

16. A method for distributing retail data in a system comprising data storage means arranged to hold product records for a plurality of product types; at least one portable wireless terminal comprising a first processing unit, a display, a user input device and a data capture device for keyless data capture of information indicative of a product type; and server means capable of bi-directional wireless communication with the terminal and including a second processing unit; the method comprising the steps of: capturing at the terminal

by means of the data capture device information indicative of a first product type;

transmitting that information to the server means in the form of a data request message;

in response to the data request message, retrieving by means of the server means from the data storage means at least part of the product record for the first product type;

transmitting the said at least part of the product record to the terminal for display to a user.

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